U. S. NUCLEAR REGULATORY COMMISSION
REGION I

DOCKET/REPORT NOS: 50-334/94-09
50-412/94-09

LICENSEE: Duquesne Light Company
Shippingport, Pennsylvania

FACILITY: Beaver Valley Power Station, Units 1 and 2

DATES: April 4 - April 8, 1994

INSPECTORS: D. Moy, Reactor Engineer, Systems Section, Division of Reactor Safety

Fred L Bower III 4/28/94

F. Bower, Reactor Engineer — Date
System Section
Division of Reactor Safety

APPROVED: for Harold L Gregg 5/13/94

Eugene M. Kelly, Chief — Date
Systems Section
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Areas Inspected: An announced safety inspection of the safety-related check valve program and its implementation was conducted in accordance with NRC Temporary Instruction 2515/110. The areas inspected included the check valve program, management involvement, control of industry information, check valve maintenance and trending, testing, modifications, and component walkdowns.

Results: One violation and no unresolved items were identified during this inspection. No formal program specific to check valves exists at Beaver Valley. However, many elements of an adequate program are present in existing plant programs to ensure the operability of ASME Code Class check valves included in the inservice test program (IST). A good initiative is underway to develop a specific check valve program by the end of the third quarter of 1994. However, a limited review identified a violation (VIO 412/94-09-01) in the ASME Code Class components in the Unit 2 diesel generator jacket water cooling and air start systems, that were not properly included in the IST program. NRC inspectors identified

this violation after Beaver Valley's previous corrective actions to review the IST program in response to NRC generic communications, industry information, and self-identified program deficiencies (Section 3.0).

The inspectors noted that good management involvement has resulted in the tracking of initiatives to improve the check valve and IST programs. These initiatives are long-term projects due to resource limitations. The programs and procedures for reviewing industry information were adequate, and no concerns were identified (Section 4.0).

The development of a formal check valve maintenance history and trending processes, and the related summary reports are good initiatives that are progressing adequately. However, because this program is new and still under development, its effectiveness could not be fully assessed (Section 6.0). Vendor recommendations were adequately incorporated into the maintenance procedures. The documentation of alternatives to the vendor recommended maintenance could be improved (Sections 7.0 and 8.0).

Review of a selected sample of check valve surveillance procedures determined that the procedures are adequate to verify that the check valves will perform their intended safety function (Section 9.0). No significant safety concerns were identified during the observation of one check valve testing evolution (Section 10.0). A review of two modification packages involving check valves, including the associated safety evaluations, found them technically adequate (Section 11.0). The material condition of a selected sample of check valves was satisfactory during a plant walkdown (Section 12.0).

## DETAILS

### 1.0 BACKGROUND AND SCOPE

#### 1.1 Background

The NRC regulations require that check valves are treated in a manner that provides assurance of their performance. Criterion 1 of Appendix A to 10 CFR Part 50, "General Design Criteria for Nuclear Power Plants," states, in part, that structures, systems, and components important to safety shall be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed. The quality assurance program (which includes testing) to be applied to safety-related components is described in Appendix B to Part 50, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants."

In addition to the general requirements of Appendixes A and B to Part 50, Section 50.55a of the NRC regulations requires application of the ASME Boiler and Pressure Vessel Code. Paragraph (g) of Section 50.55a requires that the provisions of Section XI of the ASME Code be met for inservice testing of components covered by the Code.

On August 29, 1988, the NRC staff issued Information Notice 88-70, "Check Valve Inservice Testing Program Deficiencies," as a result of the inspection of check valve activities at several nuclear power plants. A common finding from those inspections was that not all safety-related check valves had been included in the inservice testing (IST) programs. Another finding was that some of the check valves, within the IST programs were not being tested in a manner that verified their ability to perform their safety-related functions.

On April 3, 1989, the NRC issued Generic Letter 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," to assist licensees on correcting several weaknesses found in IST programs. Positions 1 through 4 and 10 address the inservice testing of check valves. Position 11 indicates that certain valves have been erroneously omitted from the IST programs in the past. The position further reminds licensees and permit holders that, while 10 CFR 55.55a delineates the testing requirements for ASME Code valves, the testing of valves is not to be limited to only those components covered by 10 CFR 50.55a. Detailed information on the implementation of Generic Letter 89-04 was provided in the minutes of the public meetings held by the NRC staff to discuss the generic letter.

#### 1.2 Scope

The NRC has developed a Temporary Instruction (TI 2515/110) to assess the effectiveness of licensee programs regarding the performance and testing of safety-related check valves. There are four objectives in performing this TI: (1) to verify that the licensee has a program in place to ensure the operational readiness of check valves in the nuclear power plant safety systems; (2) to select a sample of check valves from the population of check valves in safety-related systems and verify the presence in a testing program, types of testing, testing

methodologies, maintenance and preventative maintenance activities, design application review aspects, and system walkdowns; (3) to verify that appropriate trending of check valve failures, maintenance and test results are conducted and that effective action is taken to prevent repetitive failures; and (4) to verify management involvement by the licensee in the development and implementation of a comprehensive program to provide assurance of the operability and reliability of check valves at the plant.

## 2.0 EQUIPMENT AND DOCUMENTS REVIEWED

### 2.1 Selected Check Valve Sample

A review of Beaver Valley's Level 1 probabilistic risk assessment (PRA) analysis information and the system P&IDs were used to select a safety significant sample of ten valves from each Unit for detailed inspection. Based on the risk-based equipment prioritization from the Beaver Valley PRA report, the sample included the highest risk rank check valves from the river water, safety high/low injection feedwater, component cooling, and diesel generator systems. These valves and their function are listed as follows:

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|---|---|
| 1RW-158 | Charging Pump Cooler B River Water Supply Header Check |
| 1RW-159 | Charging Pump Cooler A River Water Supply Header Check |
| 1CH-153 | Charging Pump 1B Minimum Flow Check |
| 1CH-23 | Charging Pump 1B Discharge Check |
| 1SI-27 | Charging Pump RWST Supply Check |
| 1RW-57 | River Water Pump 1A Discharge Check |
| 1RW-110 | Diesel Generator Heat Exchanger Inlet 1B Supply Header Check |
| 1FO-36 | 1C/1D Diesel Generator Transfer Pump Suction Check |
| 1SI-49 | Safety Injection Accumulator 1B Discharge Check (Pressure Isolation Valve) |
| 1FW-43 | 1B Steam Generator Auxiliary Feed Check Valve |
| | |
| 2SIS-27 | Check Valve to HHSI Pumps from RWST |
| 2SIS-94 | HHSI Line Check Valve to RCS Cold Legs |
| 2SIS-95 | HHSI Line Check Valve to RCS Cold Legs |
| 2SWS-58 | Service Water Pump 21B Discharge Check |
| 2SWS-698 | Strainer Outlet Check to Service Water Pump 21B Seal |
| 2CCP-290 | Reactor Coolant Pump 21B Thermal Barrier Cooling Water Supply Check |
| 2SIS-6 | LHSI Pump A Discharge Check |
| 2SWS-107 | Service Water Supply Header B Check |
| 2CHS-476 | RCP 21B Seal Supply /containment Check |
| 2SIS-132 | LHSI Pump 21B Discharge Check to Cold Legs |

### 2.2 Documents Reviewed

The documents listed in Attachment 2 of this report were used by the inspectors in performing the inspection of the safety-related check valves at this site.

## 3.0 CHECK VALVE PROGRAM

### 3.1 Current Check Valve Program

The inspectors performed a review to verify that Beaver Valley has a program in place to ensure the operability of safety-related check valves. At the time of this inspection, Duquesne Light did not have a formal program specific to check valves at Beaver Valley Units 1 and 2. The inspectors found that Beaver Valley's method of ensuring the operability of check valves currently consists of several site activities. Beaver Valley's ASME, Section XI, Inservice Testing (IST) program, includes testing and inspection activities for safety-related Code Class check valves. The IST check valves that are tested are done so as part of operations surveillance tests (OSTs) or Beaver Valley surveillance tests (BVTs). The IST check valves that are periodically disassembled and inspected are tracked under the maintenance planning and scheduling (MPS) system, and worked under the maintenance work request program. Other check valves that are periodically disassembled and inspected and are not part of the IST program are also tracked and worked in the MPS/MWR programs. Trending of these check valve problems is done in the check valve trending reports. These reports include both safety and nonsafety-related valves.

The inspectors verified that the IST program included all twenty of the safety-significant check valves from the selected safety-significant sample. During this inspection, the inspectors noted several examples where licensee reviews continued to identify check valves that were required to be in the IST program, that had not previously been included in the program. Reviews of NRC Bulletin 83-03, NRC Information Notice 88-70, and Beaver Valley Problem Report 1-93-46, identified the need to include additional valves in the IST program. Therefore, the inspectors conducted a limited review to determine if there were any other valves not appropriately included in the IST program. The absence of a basis document for the IST program hindered the inspectors' review and required licensee personnel to recreate the basis for including or excluding a valve from the IST program for each valve questioned. The licensee's plans to develop an IST program basis document is discussed in Report Section 4.0.

This limited review for valves not properly included in the IST program included the review of portions of the Unit 2 diesel generator support systems. The inspectors noted that Final Safety Analysis (FSAR) Figure 9.5-9, "Emergency Diesel Generator Cooling Water System," identified the jacket water cooling system for the Unit 2 diesel as an ASME Code Class III system. The inspectors found that, contrary to 10 CFR 50.55a(f) and Section XI of the ASME Boiler and Pressure Vessel Code, the pumps and valves for the Unit 2 emergency diesel generator cooling water system were not appropriately included in the Beaver Valley

Unit 2 inservice test (IST) program for pumps and valves. The inspectors found a second example of this violation (VIO 412/94-09-01) in that emergency diesel generator starting air valves EGA-148, 123, 151, 125, 118, and 119 were not included in the IST program, although FSAR Figure 9.5-10, "Emergency Diesel Generator Starting Air System," indicates that these valves are within the ASME Class III boundary. The inspectors noted that their review was limited, and that there may be additional valves that should be in the program that have not yet been identified.

Additionally, the inspectors reviewed primary coolant system pressure isolation valves (PIV) for BVPS Units 1 and 2. The design examined in the analysis contained in-series check valves isolating the high pressure primary coolant system from the low pressure injection system piping. The scenario that leads to the Event V accident is initiated by the failure of these check valves to function as a pressure isolation barrier. This could lead to an overpressurization and rupture of the low pressure piping that results in an intersystem loss of coolant accident (LOCA) that bypasses containment. This postulated event is a significant contributor to the risk of a core melt accident. The inspectors verified that the PIVs in Beaver Valley technical specification in Table 4.4-3 were listed in the inservice testing program.

### 3.2 Check Valve Program Upgrade Plan

Beaver Valley is developing a formal program specific to check valve as outlined in a "draft" Maintenance Program Unit Administrative Procedure (MPUAP) 8.3.9. This "draft" procedure defines the check valve program at Beaver Valley for maintaining, testing, and trending the performance of check valves. In addition to the above actions regarding testing and trending safety-related check valves, the following programs and planned tasks are to be formalized for inclusion in a specific program for check valves that is under development for Beaver Valley:

- Check valves reviewed in response to INPO SOER 86-03 will be included in the check valve program. The INPO SOER 86-03 is an application guideline that required the review of the check valves in identified systems to determine if the correct type and size of check valve was used for the application, and if the optimum preventive maintenance was performed on the check valves. As a result of this INPO SOER, Beaver Valley has identified several design change package (DCPs) to correct design deficiencies on check valves;

- Check valves that are disassembled and inspected as part of the IST program through the MPS, will be evaluated by the MPS/MWR corrective maintenance review under the check valve program. The results of these inspections will be trended and compared with similar check valves' results;

- Other valves identified for inclusion in the check valve program are the check valves identified in various commitments to the NRC; and

- Following the completion of the licensee's check valve inspection, an internal summary report of check valve work activities will include any recommendations concerning frequency, design changes, procedure or testing changes, and will also include the basis for any recommendation made.

In summary, Duquesne Light has taken a good initiative to formalize a specific check valve program at Beaver Valley. The licensee has committed that this check valve program will be completed by the third quarter of 1994. This commitment was verified at the exit meeting. The effectiveness of the planned check valve program upgrade may be the subject of a future inspection by the NRC staff.

## 4.0 MANAGEMENT INVOLVEMENT

Supervisory personnel were interviewed to assess management involvement in the development and implementation of a comprehensive program to provide assurance of the operability and reliability of check valves at the plant. There are management directives and administrative procedures for the inservice test (IST) program at Beaver Valley; but, as discussed in the previous section, none of these documents have been issued specifically for a check valve program. Discussion with supervisory personnel in the maintenance engineering and assessment department (MEAD) indicated that the drafting of a check valve program administrative document (MPUAP 8.3.9) began in the fall of 1993, and the licensee has committed to complete the development of this program by the end of the third quarter of 1994. The inspectors noted that the MEAD weekly work status list tracked the drafting of this administrative procedure and the estimated completion date (ECD). The completion of this document also will be tracked by the MEAD tracking system.

A review of the MEAD weekly work status list revealed that two other initiatives to upgrade the check valve program are also being tracked by this system: (1) review of Unit 1 and Unit 2 QA Category 1 valves not in the IST program; and (2) review of the IST Policy Book for the impact of new guidance from NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants." Further discussions with licensee representatives identified that they are developing an IST Program basis document. At the time of this inspection, the licensee had purchased database software to assist in this project and had begun reviewing the Unit 2 service water system. MEAD supervisory personnel stated that this initiative will be completed as the availability of resources allow, with no estimated completion date. The inspectors concluded that management involvement has identified good initiatives to improve the check valve and IST programs, but these initiatives are long-term projects due to resource limitations.

## 5.0 CONTROL, EVALUATION AND IMPLEMENTATION OF INDUSTRY INFORMATION

The inspectors assessed the adequacy of the licensee's program to review, evaluate, and take corrective action, based on industry information provided by vendors and third parties. Nuclear Group Directive 1.2.12 specifies the review and disposition of operating experience information. This directive is scheduled for revision to reflect organizational changes at Beaver Valley. In accordance with Nuclear Safety Administrative Manual, Volume II, Chapter 9, Information Notice Review/Response, Licensing is responsible for ensuring that NRC Information Notices (INs) are reviewed, and an internal response is generated. The program requires scheduling INs for review based on safety significance. It also requires developing and documenting a position in response to the IN that is approved by appropriate station management. The inspectors reviewed a selected sample of INs relating to check valves, and concluded that they had been adequately reviewed and dispositioned in accordance with the administrative procedure.

Operations Assessment Procedure OAG-6.0, "Review of INPO Data and Vendor Technical Bulletins," was also reviewed. This procedure currently designates the responsibility to review and investigate Westinghouse technical bulletins and INPO industry information to the shift technical advisors (STA) in the operations experience group (OEG). The STAs interface with other station organizations as required to complete and document their investigation. The OEG manager indicated that the review of Westinghouse technical bulletins is planned for reassignment to the independent safety evaluation group. The inspectors concluded that the programs and procedures for reviewing industry information were adequate, and no significant concerns were identified.

## 6.0 MAINTENANCE HISTORY AND TRENDING PROGRAM

A review was conducted to verify that maintenance history records are maintained, and appropriate trending of check valve failures, maintenance, and test results are conducted. Additionally, the review was performed to ascertain whether appropriate corrective actions were taken, based on the maintenance history and trending results.

Discussion with component engineering personnel revealed that, at the end of Unit 2's third refueling outage, the maintenance manager recognized the need to document the maintenance history and recommended corrective actions for check valves. This information was included in a report attached to memorandum ND3SMD:1536, dated July 1992. The report provided a summarized compilation of test failures and repairs performed on Unit 2 check valves for the period between refueling outages 2 and 3, as well as an assessment of the identified problems. These summaries were grouped by valve type and manufacturer. Recommendations for future actions were provided for each valve type and manufacturer. Responsibilities were provided for completing the recommendations. A report for Beaver Valley Units 1 and 2 for the period between May 1992 and December 1993 is currently in draft form.

The inspector reviewed both the issued report and the new draft report, and noted that the development of the maintenance history and trending reports are not proceduralized as a formal and ongoing program. The licensee representative stated that the development of these reports will be formalized as an ongoing activity in the check valve program that is currently in draft form (Section 3.0). The inspectors also noted that the resolution of the recommended actions from the previous report had not been documented. Discussion with the licensee representatives indicated that the new check valve program would require that the recommendations from the check valve report be entered as action items in the maintenance history program open items list. The disposition of previous check valve report recommendations would be documented in subsequent check valve summary reports.

The inspectors concluded that the development of a formal check valve maintenance history and trending processes and the related summary reports were a good initiative. Because this program is new and still under development, the inspectors could not fully assess its adequacy. However, the summary reports and recommendations developed to date appeared appropriate.

## 7.0 PREVENTIVE MAINTENANCE PROGRAM

The inspectors performed a review of the mandatory preventive maintenance implemented for the selected sample of safety-related check valves. Of the twenty valves in the sample, the inspectors found that one valve (RW-110) had mandatory preventive maintenance. This valve is opened and inspected as a preventive maintenance commitment to NRC Bulletin 83-03. By reviewing the computerized maintenance record, the inspectors verified that the preventive maintenance has been completed on schedule since the commitment was made. The licensee is planning to use the information obtained through the check valve maintenance history reports to determine if the preventive maintenance program for check valves needs to be modified. No violations or significant concerns were identified.

## 8.0 CHECK VALVE MAINTENANCE PROCEDURES

The inspectors reviewed the maintenance procedures listed in Attachment 2 for technical adequacy and to determine if the procedures are sufficient to perform the maintenance task, and provide for identification and evaluation of equipment deficiencies. The procedures were compared to the vendor technical manuals to verify that the vendor recommendations were incorporated into the procedures. The inspectors also compared the information in the procedures and the vendor technical manuals to the information in the master equipment list in the licensee's configuration control database.

The inspectors found that the maintenance procedures were adequate to open, inspect, and perform routine repairs on the sampled check valves. In general, the vendor recommendations had been incorporated into the procedures, but a vendor-preventive maintenance recommendation to replace rubber seats had not been incorporated into Procedure 1/2CMP-75-Wafer Check-1M, "Repair of C&S, Clow Wafer and Mission "Duo"

Check Valves." Discussion with the licensee representative indicated that, because Beaver Valley has not experienced any catastrophic rubber seat failures, these seats are replaced as corrective maintenance when periodic testing indicates a degraded condition. The inspectors noted that this justification is not currently documented. The licensee representative stated that this justification would be added to the maintenance history report (Report Section 6.0).

During the review of a maintenance procedure against a controlled technical manual, Westinghouse, Motor Operated Gate Valves, Manually Operated Gate Valves, Swing Check Valves Instruction Book, File No. 2506.300-001-004 (Applicable to 2SIS-6 and -27), the inspectors found that the section pertaining to check valves was missing. The licensee was able to replace the missing section with a copy of pages from another controlled copy of the technical manual. No other concerns were identified.

## 9.0 CHECK VALVE TESTING PROGRAM

The inspectors reviewed the test program and procedures for the sampled valves to verify that the testing methodology demonstrates that the valves are capable of performing their required safety functions. Discussions were held with the Beaver Valley IST coordinators, and the test program and procedures were reviewed to assess the following:

- Determine if the check valves are operable per the requirement of ASME code by verifying the valves open/reverse seat properly;

- Determine that sample check valves were in the Beaver Valley IST testing program;

- Determine if the test methodology demonstrated that these check valves were capable of performing their intended safety functions; and

- Determine if test procedures correctly reflected valve testing requirements.

According to the Duquesne Light (Beaver Valley) inservice testing program for pumps and valves, Category C valves are valves that are self-actuating in response to some system characteristic, such as pressure (relief valves) or flow direction (check valves). Category C valves are divided in two groups: safety or relief valves and check valves. Check valves are to be exercised to the position required to fulfill their safety function every three months. If only limited operation is practical during plant operation, check valves are part-stroke exercised at power, and full-stroke exercised every cold shutdown. Check valves that are normally open during plant operation, and whose function to close on cessation or reversal of flow, shall be tested by proving that the disk moves promptly to the seat when flow through the valve is removed. Check valves that are normally closed during plant operation, and whose function to open on reversal of pressure differential, shall be tested by proving that the disk moves promptly away from the seat when the closing pressure differential is removed and flow through the valve is initiated.

The inspectors reviewed selected check valve surveillance procedures and found that the sampled valves are properly tested. The methods of testing of the sample valves were consistent with the Beaver Valley IST program plan, the NRC safety evaluation of the IST program plan, and associated approved relief requests. No safety concerns were identified, and all data were technically adequate.

## 10.0 OBSERVATION OF CHECK VALVE TESTING

The inspector witnessed the performance of the diesel generator monthly surveillance test (OST 1.36.1) on April 6, 1994. The purpose of the test was to demonstrate the operability of the diesel generator. The operator verified that the fuel transfer pumps met the requirements of ASME IWP 3000 and verified that dual function check valves (1FO 7 or 8) and (1DA-100 or 101) were exercised and seated properly on reverse flow. The inspector verified the acceptance criteria and initial conditions were technically adequate to perform the test. During the test, the inspector noted that several of the steps in the surveillance procedure (OST 1.36.1, step 1a and the note before step 3p) were not clear to the operator. Because the testing of the redundant air start trains are alternated monthly, marking of these steps to indicate which train requires testing is important to ensure that the correct train and check valve are tested on schedule. Subsequent to the test, the inspector noted that this surveillance test was marked incorrectly with the untested train from Surveillance Test 1.36.1 for March 1994. The inspectors verified that, although the wrong train was marked, the correct train was tested for April 1994. The inspector brought the matter to the attention of the licensee. Licensee representatives indicated that they would modify these surveillance test steps to improve the clarity of the test.

## 11.0 CHECK VALVE DESIGN MODIFICATION PACKAGE REVIEWS

The inspectors reviewed two 10 CFR 50.59 safety evaluations for two check valve modification packages based on following:

- Systems and components affected by the change. The effect on their capability to perform the specific or intended safety functions;

- Parameters of the accident analysis affected by the changes; and

- Safety evaluation should not only place significance on identifying potential failure modes, in lieu of examining the potential consequences of system or component failures.

These two modification packages were: (1) DCP No. 1985, BV1 Seal Water Return Line Rerate, Document No. 8700-DC-1985-0, Rev. 0, dated April 5, 1993, (this design change prevented the low head safety injection pump from being potentially capable of overpressuring the seal water return line and lifting relief valve RV-CH382B); and (2) DCP 2056, BV-2 2SWS-95, 96, 697 and 698 Check Valve Internal Removal, SMR No. 2871,

dated November 17, 1993, (this design change was to remove check valve internal from the service water system to increased flow to water pump and motor cooling coils). The inspectors concluded that the safety evaluations for these two check valve modifications were technically adequate.

## 12.0 WALKDOWN OBSERVATIONS

A walkdown was conducted on the valves from the selected sample that were accessible with the plant operating at power. The walkdown was conducted in portions of the Unit 1 and Unit 2 diesel generator rooms, the Unit 2 safeguards building, the intake structure, the Unit 1 auxiliary building, and the Unit 1 auxiliary feed pump room and main steam valve room, to review the sampled check valves for material condition and proper orientation. No deficiencies of immediate safety concern were noted. Licensee representatives stated that maintenance work requests would be generated to address minor discrepancies, such as missing galvanic corrosion isolators and protective coatings.

## 13.0 EXIT MEETING

Licensee management was informed of the scope and purpose of the inspection at an entrance meeting conducted on April 4, 1994.

During the course of the inspection, the inspectors' findings were discussed periodically with the licensee representatives listed in Attachment 1 of this report. An exit was conducted on April 8, 1994, at which time the findings of the inspection were presented and the licensee's commitments were verified.

## ATTACHMENT 1

### Persons Contacted

Duquesne Light Company Personnel

| | | |
|---|---|---|
| | C. Custer | Director, Component Engineering |
| * | L. Freeland | General Manager, Nuclear Operations |
| * | K. Grada | Manager, QSU |
| * | K. Halliday | Director, Electrical Engineering |
| | J. Johns | Supervisor, Quality Services |
| * | D. Jonet | Sr. Engineer, IST Coordinator |
| * | F. Lipchick | Sr. Licensing Supervisor |
| * | S. Loehlein | NED Supervisor |
| * | A. Mizia | QSU |
| * | W. Nealon | Engineer I |
| * | T. Noonan | Vice President, Nuclear Operations and Plant Manager |
| * | B. Sepelak | Licensing Engineer |
| * | M. Siegel | Manager, Nuclear Engineering Department |
| * | P. Slifkin | Supervisor, Mechanical Component Engineers |
| * | G. Thomas | DUP - Nuclear Services |
| * | N. Tonet | Manager, NSD |
| * | J. West | Sr. Engineer, DLC, MEAD |
| * | R. Williams | Supervisor, Surveillance and Assessment |

United States Nuclear Regulator Commission

* L. Rossbach, Senior Resident Inspector

* Denotes those personnel attending the exit meeting of November 19, 1993

The inspectors also held discussions with managers, supervisors, and other licensee employees during the course of this inspection including operations and technical personnel.

## ATTACHMENT 2

### Documentation Reviewed

Procedures

Maintenance Procedures

1CMP-75-Rockwell Ck VLV-1M, Repair of Rockwell Piston Check Valve, Revision 1, Issue 4, dated May 27, 1993 (Applicable to CH-153)

1PMP-36EE-Auto Check-1M, Emergency Diesel Generator Starter Air Compressor Discharge Check Valve Inspection, Revision 0, Issue 4, dated June 5, 1991 (Applicable to DA-100)

1CMP-75-Crane Check-1M, Repair of Crane Check Valve Sizes 2" through 8," Revision 2, Issue 4, dated February 28, 1993 (Applicable to FW-43)

1CMP-75-A/D-Check-1M, Repair 12-inch Darling Swing Check Valve Tag# 12C48Z, Revision 0, Issue 4, dated July 6, 1992 (Applicable to SI-49)

1/2CMP-75-Wafer Check-1M, Repair of C&S, Clow Wafer and Mission "Duo" Check Valves, Revision 1, Issue 4, dated October 15, 1992 (Applicable to RW-158, -159, and -110)

1/2CMP-75-Atwood Check-2M, Repair of Atwood & Morrill Pressure Seal Backweighted Check Valves (VCW150-X-2), Revision 1, Issue 4, dated October 14, 1993 (Applicable to 2CHS-476, and 2SIS-132, -94, and -95)

2CMP-75-Dresser Check-2M, Repair of Dresser 1500 lb Check Valves (VCS 150-C-3), Revision 0, Issue 4, dated October 22, 1991 (Applicable to 2CCP-290)

2CMP-75-West Check-1M, Repair of Westinghouse Swing Check Valve 3" to 12" (VCW015, VCW030, VCW150), Revision 0, Issue 4, dated February 3, 1992 (Applicable to 2SIS-6 and -27)

Technical Manuals

Instruction Manual for Rockwell-Edwards Valves, File No. 8700-6.35-044 (Applicable to CH-153)

Automatic Valve Corporation, Maintenance Instructions, File No. 8700-6.44-31 (Applicable to DA-100)

Crane, Technical Data-Gate Valve & Swing Valves File No. 8700-06.031-0131 (Applicable to FW-43)

Darling valve, Instruction Manual, Installation, Operation,, and Maintenance of darling OS&Y Manual Gate Valves and Swing Check Valves, File No. 8700-06.039-0009 (Applicable to SI-49)

Clow, Instruction Manual for Dual Plate Wafer Check Valve, File No. 8700-06.052-0021 (Applicable to RW-158, -159, and -110)

Atwood & Morrill, Instruction Manual for Backweighted Check Valves, File Nos. 2506.420-020-004 and -009 (Applicable to 2CHS-476, and 2SIS-132, -94, and -95)

Dresser Industries, Instruction Manual for 1500 lb Forged Globes & Checks, File Nos. 2506.320-064-002 (Applicable to 2CCP-290)

Westinghouse, Motor Operated Gate Valves, Manually Operated Gate Valves, Swing Check Valves Instruction Book, File No. 2506.300-001-004 (Applicable to 2SIS-6 and -27)

Miscellaneous Documents

Beaver Valley Power Station Nuclear Group Directive No. 1.8.2, Inservice Testing (IST), Revision 0;

Beaver Valley Power Station Nuclear Group Directive No. 1.2.12, Operating Experience Review Program, Revision 0;

Beaver Valley Unit 2 Inservice Test (IST) Program for Pumps and Valves, Revision 12, Issue 1, dated November 18, 1993

Nuclear Safety Administrative Manual, Volume II, Chapter 9, Information Notice Review/Response, Revision 2, dated March 16, 1993;

Operations Assessment Procedure OAG-6.0, Review of INPO Data and Vendor Technical Bulletins, Revision 15, dated January 13, 1993;

NRC Bulletin 8[illegible]-03, Check Valve Failures in Raw Water Cooling Systems of Diesel Generators, dated March 10, 1983;

Risk-based Equipment Prioritization for Beaver Valley Power Station, Unit 1 and Unit 2, Rev. 0, Duquesne Light Company; and

Inservice Test (IST) program for pump and valves Unit 1, Rev. 11, 11/22/93.

Operations Surveillance Procedures

1.55A.4 OST 1.36.1, Diesel Generator No. 1 Monthly Test, Rev. 6, 3/31/94;

1.55A.4 OST 1.24.8, Motor-Driven Auxiliary Feed Pumps Check Valves and Flow Test, Rev. 6, 10/22/93;

1.55A.4 OST 1.30.14, Stroke Test for Check Valve [IRW-158 & 159], Rev. 2, 3/23/94;

1.55A.4 OST 1.11.14, Safety Injection System Full Flow Test, Rev. 3, 5/26/93;

1.55A.4 OST 1.30.3, River Water Pump 1B Test, Rev. 6, 3/22/94;

1 OST-11.20 Partial Stroke of SIS Check Valves, Rev. 1, 10/20/93;

1 OST 7.50 Centrifugal Charging Pump Test [1 CH-p-1B], Rev. 2, 2/22/94;

1.55A.4 OST 1.11.4B, Accumulator Check Valve Test [ISI-48, 49, 50], Rev. 1, 4/9/94;

2 OST-30.3, Service Water Pump [2 SWS P21B] Test, Rev. 2, 2/9/94;

2 OST-30.13B, Train B Service Water System Full Flow Test, Rev. 0, 11/12/93; and

2 OST-30.8, Standby Service Water System Test, Rev. 1, 11/7/93.