

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-334/88-04

Docket No. 50-334

License No. DPR-66

Licensee: Duquesne Light Company  
Post Office Box 4  
Shippingport, Pennsylvania 15077

Facility Name: Beaver Valley Power Station, Unit Number 1

Inspection At: Shippingport, Pennsylvania

Inspection Conducted: February 1-5, 1988

Inspectors: Joseph A. Golla  
Joseph A. Golla, Reactor Engineer

3/3/88  
date

Harold Gregg  
Harold Gregg, Lead Reactor Engineer

3/3/88  
date

Approved by: P. K. Eapen  
for P. K. Eapen, Chief Special Test  
Programs Section, EB, DRS

3/3/88  
date

Inspection Summary: Inspection on February 1-5, 1988 (Inspection Report  
No. 50-334/88-04)

Areas Inspected: Routine unannounced inspection of inservice test program implementation of pumps and valves, review of procedures and test results, and test witnessing.

Results: No violations or deviations were identified. However, two unresolved items were identified. One item involved the leak testing of check valves in procedure OST 1.11.16 and the other involved the close out response, for IEN 86-05. These unresolved items require licensee's attention.

## DETAILS

### 1.0 Persons Contacted

#### 1.1 Duquesne Light Company

- J. Carey, Senior Vice President, Nuclear Operations
- \* B. Cherry, Senior Test Engineer
- \* L. Freeland, Nuclear Operations Supervisor
- C. Jenkins, Operations Coordinator
- D. Jones, Senior Engineer
- \* K. Grada, Manager Nuclear Safety
- A. Hartner, Control Room Shift Supervisor
- \* F. Lipchick, Senior Licensing Supervisor
- \* A. Mizia, Supervisor QA Operations
- \* T. Noonan, Assistant Plant Manager
- \* B. Sepelak, Licensing Engineer
- \* J. West, Engineer (IST Coordinator)
- \* R. Williams, Principal Engineer

#### 1.2 U.S. Nuclear Regulatory Commission

- \* J. Beall, Senior Resident Inspector
- \* S. Pindale, Resident Inspector

\* Denotes those present at exit meeting.

### 2.0 Summary

The licensee's Inservice Testing (IST) of Pumps and Valves was implemented to a reasonably effective level. Testing of components was performed in accordance with commitments and regulatory requirements. An IST organization is in place with designated responsibilities assigned and personnel were knowledgeable of the issues. Test records and other recorded information was maintained and was readily available and test schedule adherence of selected pump and valve was found acceptable.

Two of the inspection activities resulted in an unresolved item status and warrant licensee's attention. These two items involved the adequacy of:  
1) leak test results of several check valves in procedure OST 1.11.16, and  
2) the close-out response to Inspection and Enforcement Information Notice (IEN 86-05) concerning main steam safety valve ring settings.

### 3.0 Inspection Purpose and Scope

This inspection was conducted to review and assess the licensee's implementation of their IST pump and valve test program commitments and other activities associated with IST implementation. Verification of adherence to regulatory requirements, ASME Section XI requirements and

licensee's commitments as well as consideration of safety consequences, organizational structure and interfacing of other departmental groups are to be addressed.

The low head Safety Injection system components were selected by the inspectors as the area to concentrate the inspection effort. Other IST components would also be reviewed on a selective basis.

#### 4.0 IST Program Background

The inspector reviewed the licensee's current IST pump and valve program and held discussions concerning the program with cognizant IST Personnel. The following inspector determinations were made:

- The IST program is maintained as a separate program and not a subdivision of Inservice Inspection, and is a controlled document.
- The current program is in the first ten year testing interval and is in Revision 4 of Issue 1.
  - IST requirements are to ASME Section XI, 1974 Edition through Summer 1975 Addenda.
  - The interval was initially defined as October 1, 1976 through September 30, 1986.
  - The NRC Office of Nuclear Reactor Regulation (NRR) issued a Safety Evaluation of the licensee's first ten year program on June 29, 1982.
  - The first 10 year interval was first extended to September 20, 1987 as noted in NRC letter dated April 28, 1986.
  - A subsequent extension of 30 days following restart from the 6th refueling outage (presently scheduled for end of March 1988) and a contingency date in the event NRC issues the second ten year program safety evaluation is discussed in Duquesne Light Company's letter to NRC dated September 2, 1987.
- A meeting between NRC and their consultant and the licensee to discuss the licensee's second ten year program submittal of April 1, 1986 was held on site in October 1987.

#### 5.0 Surveillance Procedure and Results Review

##### 5.1 Procedure OST 1.11.1 Safety Injection Pump Test

The inspector reviewed the above surveillance procedure and test results for the low head safety injection pump ISI-P-1A dated

December 23, 1987. The inspector noted that the test had been completed satisfactorily and the cover sheet was signed as properly completed by the shift supervisor and was reviewed and signed as satisfactory by the operating supervisor. The procedure included test acceptance criteria, precautions, initial conditions, and step by step instructions to perform the test. The procedure also required test instrumentation and calibration due dates be filled in. The procedure required that pump discharge and suction pressure be measured, and pump differential pressure calculated for flow determinations. Vibration readings were taken at two locations on the pump shaft 90 degrees apart and were within the defined acceptance criteria of the procedure. The pump differential pressure of 127.79 psig calculated from the test was within the acceptance range of 125.5 to 130.6 psig. The inspector noted that pump bearing temperatures were not required to be taken during this test. This parameter is on a separate surveillance frequency.

The inspector's determination based on review of the procedure content and the specific test results was that ASME Section XI Code requirements were met.

#### 5.2 Procedure OST 1.11.16 Leakage Testing RCS Pressure Isolation (Safety Injection System) Valves

The inspector reviewed the subject procedure and the test results of April 27, 1987. The purpose of this surveillance test is to measure the leakage of the low head safety injection check valves 1 SI 10, 11, 12, 23, 24 and 25. The procedure contains acceptance criteria, initial condition requirements and detailed step by step instructions to perform the test.

During review of the test results, the inspector noted that valves 1 SI 23, 24, 25 (the first boundary check valves) had a small amount of leakage, whereas valves 1 SI 10, 11, 12 (the second check valves of the two in series check valves) had zero leakage. The inspector reviewed some earlier tests and the results were similar. The zero leakage indicated to the inspector that the test method may not be appropriate. A review was made of the piping schematic drawings (DLC Drawing RM 167 A&B, Safety Injection System OM 11-1 and 11-2). The inspector noted that the first boundary is pressurized through the RCS system and leakage is verified through a low point drain in close proximity to the valve. The second valve is pressurized from between the two valves and leakage is measured farther downstream at a possible higher pipe run elevation and through a high point vent. The inspector was concerned that the line may not be full, which the procedure doesn't verify and also the effect of the higher pipe elevation could contribute to inaccurate leakage measurements.

The possible inappropriate leak rate determination was discussed with cognizant personnel. The inspector reviewed the safety implications of unreliable leak measurement and didn't consider this to be a safety issue since a severely degraded check valve during operation would cause a relief valve to open and other monitoring devices would indicate a problem, and this has not been the case.

The inspector concluded that the licensee's Safety Injection testing procedural steps may need to be modified to satisfy the ASME Section XI, Code leakage measurement intent. The licensee committed to review the procedure and to make any necessary changes to enhance its effectiveness. This item is unresolved pending the licensee's evaluation and enhancement actions and NRC's review (Unresolved Item 50-334/88-04-01).

#### 6.0 Trending of Test Results

The inspector determined that the licensee has a formal system to trend pump and valve test results. Trend reports are written by the Shift Technical Advisors (STA) of the Technical Advisory Group. An IST review responds to the trend reports with comments, resolution of recommendations and required additional actions and follow up.

The Test Advisory Group pump trend reports are issued on a quarterly basis and IST reviews and responses are also quarterly. The valve trending is done in a similar manner but is on a semi annual basis.

The inspector reviewed trend reports dated September 21, 1987, August 13, 1987 and January 22, 1987. Review was also made of the IST responses of September 25, 1987, August 13, 1987 and February 13, 1987, and the inspector verified that licensee commitments and ASME code requirements were being met and that the trending system is effective.

#### 7.0 Test Witnessing Boric Acid Transfer Pump Test OST 1.7.2

On February 4, 1988 the inspectors witnessed the operational surveillance test of boric acid transfer pump 1CH-P-2B. The inspectors observed the completion of pretest activities in the control room verifying that the proper initial conditions were in place prior to the start of the test. The inspectors also observed that portion of the test performed at the pump location (B Boric Acid Pump Cubicle). The inspector verified that the differential pressure and shaft vibration measurements taken at the pump met the test acceptance criteria, and observed the performance of the test technician during the conduct of the test. He was found to be knowledgeable and capable to perform his duties. All procedural sign-offs were completed in a timely manner.

## 8.0 Test Schedule Adherence

The inspectors also verified that the test surveillance intervals were adhered to for centrifugal charging pump CH-P-1A, low head safety injection pumps SI-P-1A and SI-P-1B, and quench spray chemical addition pump QS-P-4A. These pumps are functionally tested on a monthly basis per Beaver Valley IST program requirements. The inspectors reviewed pump summary sheets which contained the recorded results of the monthly surveillances. These results were well documented and all records reviewed were orderly and up to date.

The inspector reviewed the Control Room records of valve stroke summary for MOV-SI-853A, B and C, and MOV-SI-864A and B and the check valve test summary. Test schedule adherence was met. No unacceptable conditions were identified.

## 9.0 Licensee Activities on Previously Identified Items

### Main Steam Safety Valves (MSSV)

The inspector reviewed the licensee's activities related to NRC Inspection and Enforcement Information Notice (IEN) 86-05 and its supplement. This notice provided licensee's information of potential problems with ring setting adjustment on MSSVs (an IST listed component) which could prevent obtaining full rated flow capacity.

The inspector reviewed the licensee's close out of this item dated June 10, 1986 (NDITPP:0414). The close out was based on the following:

Phone contact was made with Dresser, the supplier of the MSSVs installed at Beaver Valley 1. They informed the licensee that Dresser had recently performed full size flow testing on the 3700 series valves (similar to Beaver Valley 1 valves) at Wyle Laboratories and that full flow would be obtained at all ring settings.

The inspector noted that this information was documented, however, the inspector concluded that more information of a formal nature should be obtained before this item can adequately be closed. The inspector was also concerned about the full flow at all ring settings statement.

The licensee's maintenance history was reviewed and it was determined that periodic set point testing is performed on the installed valves and that ring settings are not involved. The resolution of the MSSV issue at the Beaver Valley 2 site as documented in NRC Inspection reports (86-10, 86-33 and 87-60) was also discussed with the licensee.

This item is unresolved pending the licensee obtaining formal information from the vendor regarding the ring settings of the BV-1 installed valves and flow test data of vendor testing, and the ring setting correlation between the installed and flow tested valves (UNR 50-334/88-04-02).

#### 10.0 QA Involvement

The inspector discussed QA involvement in IST with a licensee representative and reviewed QA audit records documenting the licensee's findings of the last IST program QA audit conducted March 17 through April 15, 1987. The audit report identified seven observations, six of which required a response. The inspector also reviewed documentation which responded to the six observations and found in each case the licensee's response to be thorough. The responses typically included action taken to correct the deficiency, measures taken to prevent recurrence, and the date when corrective action will be complete. The licensee indicated that the IST program is audited by QA once per year and that another audit is tentatively scheduled for the spring. No unacceptable conditions were identified.

#### 11.0 Engineering Interface

The inspector reviewed the interface between the IST and Engineering groups. The inspector determined that there is interaction. When clarification or engineering input is required IST personnel initiate an Engineering Memorandum (EM), a two part form, which requires an engineering response. The inspector reviewed several EMs (Nos. 62150 and 63185) and verified they were effectively completed.

#### 12.0 Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations or deviations. Unresolved items are discussed in paragraphs 5.2 and 9.0 of this report.

#### 13.0 Exit Meeting

The inspector met with the licensee's representative (identified in paragraph 1.0) at the conclusion of the inspection of February 5, 1988, to summarize the findings of this inspection. The NRC Resident Inspectors, were also in attendance.

During this inspection, the inspector did not provide any written material to the licensee.