

Duquesne Light Company

Beaver Valley Power Station
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April 13, 1994

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U. S. Nuclear Regulatory Commission
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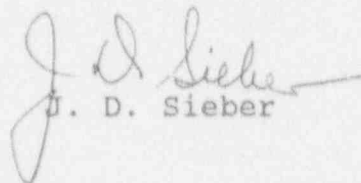
Subject: Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
Combined Inspection Report 50-334/94-03 and 50-412/94-03
Reply to Notice of Violation

In response to NRC correspondence dated March 9, 1994, and in accordance with 10 CFR 2.201, the attached reply addresses the Notice of Violation transmitted with the subject inspection report.

In addition, clarification of statements in the subject inspection report regarding Recirculation Spray Heat Exchanger flow testing are also being provided.

If there are any questions concerning this response, please contact Mr. N. R. Tonet at (412) 393-5210.

Sincerely,


J. D. Sieber

Attachment

cc: Mr. L. W. Rossbach, Sr. Resident Inspector
Mr. T. T. Martin, NRC Region I Administrator
Dr. G. E. Edison, Project Manager
Dr. P. K. Eapen, Chief, Systems Section, Engineering Branch

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DUQUESNE LIGHT COMPANY
Nuclear Power Division
Beaver Valley Power Station Unit No. 1

Reply to Notice of Violation

Combined Inspection Report 50-334/94-03 and 50-412/94-03
Letter dated March 9, 1994

VIOLATION (Severity Level IV; Supplement I)

Description of Violation (50-334/94-03-01)

Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion XVI, "Corrective Action" requires in part that, in the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.

The licensee's Quality Assurance Program Manual, Procedure POL-1, "Quality Assurance Program Policy," Rev. 3, paragraph 16.1.2 states, "In those cases involving significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action is taken to preclude repetition."

Contrary to the above, as of January 7, 1994, the measures established to assure that the cause of an adverse condition is determined and corrective actions taken to preclude repetition were inadequate, as evidenced by the following:

On October 21, 1991, the debris in the dead leg portions of the river water system caused the containment recirculation spray heat exchangers to be inoperable. The licensee's corrective actions were not effective to preclude a similar occurrence on January 7, 1994.

Discussion of the Violation

On October 21, 1991, a condition adverse to quality was identified at Beaver Valley Unit 1 (BV-1) while performing the quarterly river water pump surveillance testing. The "A" train Recirculation Spray Heat Exchangers (RSHXs) were declared inoperable due to inadequate river water flow. Following plant shutdown and RSHX cleaning, the cause of the RSHX fouling was determined to be Asiatic clams. Contributing factors to the event were also identified as follows:

1. Due to the minimal clearance between the river water pump suction bell and the intake bay floor, starting of a pump could pull clams and debris from the bay floor into the river water system.
2. Due to the piping configuration at the inlet to the Reactor Plant Component Cooling Water System (CCR) heat exchangers, the valving sequence used to isolate a CCR heat exchanger could result in clams and debris from the CCR heat exchanger tube sheet falling into the dead leg area upstream of the RSHX supply isolation valves (MOV-RW-103A, B, C and D).

Discussion of the Violation (Continued)

3. Leakage past the RSHX supply isolation valves, MOV-RW-103A, B, C and D, allowed silt and sediment to accumulate in the RSHX supply piping and also provided oxygen for the nourishment of clams which may have been growing in the lines.

Duquesne Light Company implemented the following corrective actions in an attempt to preclude repetition:

1. The frequency for logging river depth in front of the intake bay was increased, and the acceptance criteria for dredging was changed from 15" of silt above the inlet bay floor to 0".
2. Intake bay cleaning frequency was increased; procedure 1/2OST-30.19 directs performing quarterly monitoring of the main and alternate intake bays and requires cleaning if any point exceeds 15" of silt. In addition, bays are cleaned every year in the Spring.
3. Operations Department procedures were revised to require a 15 minute flush back to the river via the Alternate Intake Structure when starting a river water pump to preclude introducing clams, debris and silt into the system upon initial pump startup.
4. The Operating Manual (OM) procedure for securing a CCR heat exchanger was revised to prevent clams from falling off the inlet tube sheet into the header dead leg at the MOV-RW-103 valves. The revised sequence is as follows: The CCR side is isolated first; then after a 20 minute thermal stabilization period, the river water inlet isolation valve is shut followed by closure of the river water outlet valve.
5. MOV-RW-103A, B, C and D were replaced during the BV-1 Ninth Refueling Outage (1R9) to stop river water leakage into the RSHXs. Following this, the heat exchangers were placed in wet lay-up and Controlotron flow measuring instruments were installed on the river water headers for river water pump quarterly surveillance testing.
6. Clamicide treatments were implemented at both units to coincide with clam spawning and migration.
7. A design change (DCP-1254) was completed in September 1992 to provide for continuous injection of chemical dispersant into the river water headers. This dispersant maintains silt in suspension and prevents it from depositing in low flow areas.

However, these corrective actions implemented following the October 1991 event were not sufficient to prevent a similar event from occurring in January 1994.

Reason For the Violation

Despite the corrective actions taken following the October 21, 1991, event, debris in the form of clams and scale built up in the dead leg portions of river water piping in an amount sufficient to cause fouling of the RSHXs.

Corrective Actions Taken

Following the RSHX fouling event on January 7, 1994, the following corrective actions were immediately initiated to resolve the problem:

1. A plant shutdown was performed and the A, B and C RSHXs were cleaned.
2. After cleaning, flow testing was conducted to verify that flow through the A, B, C and D RSHXs could meet technical specification requirements.

Actions Taken to Prevent Recurrence

For the remainder of this operating cycle, periodic flushing of each river water train to the RSHXs will be conducted to remove silt, debris and small clams from the system dead legs. Flow data will be taken during these flushes to ensure that technical specification flow requirements for the RSHXs are being met.

In addition to the periodic flushing, a design change (DCP-2078) is being scheduled for the BV-1 Tenth Refueling Outage (1R10) which will install a permanent flush line downstream of the existing dead legs. This flush line will bypass the RSHXs and will provide the capability to flush each train individually without flowing through the heat exchangers. A flushing frequency will be established prior to plant startup from 1R10 to ensure that system operability can be maintained. In addition, a plan for verifying the effectiveness of system flushing will also be developed by the end of 1R10.

After the flush line has been installed and verified to be effective, station procedures will be revised to require that as-found flow testing through the RSHXs be performed before RSHX cleaning.

Date When Full Compliance Will Be Achieved

1. Periodic flushing of each river water train through the RSHXs is being implemented and will continue until 1R10 which is scheduled to begin in October 1994.
2. The installation of a bypass flush line per DCP-2078 will be completed by the end of 1R10.

Date When Full Compliance Will Be Achieved (Continued)

3. A system flushing frequency will be established and a plan developed to verify its effectiveness by the end of 1R10.
4. Station procedures will be revised by the BV-1 Eleventh Refueling Outage (1R11) to require that as-found flow testing be performed before RSHX cleaning.

Clarification of Inspection Report Statements Regarding RSHX Flow Testing

Page 2 of NRC Inspection Report 50-334/94-03 and 50-412/94-03 states:

"The technical specification surveillance test procedure was changed to require flow testing of the containment recirculation spray heat exchangers (RSHXs) prior to cleaning. Pre-cleaning of the RSHXs will be discontinued."

Duquesne Light Company provides the following clarification to this statement:

Pre-cleaning of the RSHXs has not been performed in the past, and as of this date, no procedure has been changed to require RSHX flow testing prior to cleaning. Prior to the current operating cycle, flow measurements through the RSHXs were performed during the quarterly river water pump surveillance tests. The results of the last tests performed before a refueling outage provided the as-found data before RSHX cleaning. Since the January 7, 1994 event, we have returned to measuring flow through the RSHXs during quarterly river water pump surveillance testing. This method will continue until the end of the current operating cycle. As with past practice, the results of the last tests performed before the next refueling outage will provide the as-found data before RSHX cleaning.

In addition, a Temporary Operating Procedure (TOP) was developed during the January 7, 1994 event to perform flushing of the RSHXs on an as needed basis. This TOP will be revised prior to its next performance to record the initial flow through the RSHXs prior to flushing.

As described in the response to the violation, after the flush line has been installed and verified to be effective, station procedures will be revised to require that as-found flow testing through the RSHXs be performed before RSHX cleaning.