



Duquesne Light

435 Sixth Avenue
Pittsburgh, Pa.
15219



(412) 456-8000

May 26, 1981

United States Nuclear Regulatory Commission
Office of Inspection and Enforcement
Attn: Boyce H. Grier, Regional Director
Region I
631 Park Avenue
King of Prussia, Pennsylvania 19406

Reference: Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
IE Bulletin 81-03

Gentlemen:

We have completed our review of IE Bulletin 81-03, "Flow Blockage of Cooling Water to Safety System Components by CORBICULA SP. (Asiatic Clam) and MYTILUS SP. (Mussel) and a report containing the details of our evaluation is attached. The Duquesne Light Annual Ecological Report indicates the presence of Corbicula sp. during previous years, however, no clams have been reported in the quarterly surveys for 1979 and 1980. The last reported sample taken on September 23, 1980 indicated no clams present in the local environment. The Mytilus sp. problem is not applicable to Beaver Valley since the Mytilus sp. is a salt water species.

Since clam shells had been found during past inspections, an investigation was performed to confirm the absence of clams or clam debris in potentially affected fire protection and safety related systems at Beaver Valley Power Station.

The following systems and components were within the scope of this investigation:

- 1) Intake Structure Bays
- 2) Recirculation Spray Heat Exchangers
- 3) Reactor Plant Component Cooling Water Heat Exchangers
- 4) River Water In-line Strainers
- 5) Charging Pump Coolers
- 6) Control Room Ventilation System River Water Cooling Coils and Air Conditioning Condenser
- 7) Emergency Diesel Generator Coolers
- 8) Fire Protection System

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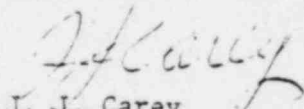
A visual inspection was conducted on components of the potentially affected systems whenever it was possible. Where a visual inspection was not practicable, Operational Surveillance Test (OST) results were evaluated and it was concluded that no flow blockage had occurred.

After visually inspecting or operationally testing a representative sample of components within the scope of this inspection, we have determined that clams are not causing a degradation of cooling systems at Beaver Valley Power Station, Unit No. 1. In addition to present prevention and detection methods, visual inspections for clams have been added to existing procedures to aid in detecting any future increase in clam infestation of cooling systems. The prevention and detection methods used presently and planned for the future should provide adequate indication of potential problems involving flow blockage or degradation due to clam debris.

Our estimate of the manpower expended in conducting the review and preparing this response is 50 manhours. The additional manpower required for procedure revision was 2 manhours.

If you have any questions concerning this response, please contact my office.

Very truly yours,


J. J. Carey
Vice President, Nuclear

Attachment

cc: D. A. Beckman, Resident Inspector
United States Nuclear Regulatory Commission
Beaver Valley Power Station
Shippingport, PA 15077

United States Nuclear Regulatory Commission
c/o Document Management Branch
Washington, DC 20555

United States Nuclear Regulatory Commission
Director, Office of Inspection and Enforcement
Washington, DC 20555

COMMONWEALTH OF PENNSYLVANIA)
COUNTY OF BEAVER) SS:

On this 26th day of May, 1981, before
me, Judith D. Anthony a Notary Public in and for said Commonwealth
and County, personally appeared J. J. Carey, who being duly sworn, deposed,
and said that (1) he is Vice President of Duquesne Light, (2) he is duly
authorized to execute and file the foregoing Submittal on behalf of said
Company, and (3) the statements set forth in the Submittal are true and
correct to the best of his knowledge, information and belief.

Judith D. Anthony
Notary Public

JUDITH D. ANTHONY, Notary Public
Shippingport Borough, Beaver Co., Pa.
My Commission Expires Dec. 12, 1983

DUQUESNE LIGHT COMPANY
Nuclear Operations Department
Beaver Valley Power Station, Unit No. 1

Report

Flow Blockage of Cooling Water to Safety System Components
by CORBICULA SP. at the Beaver Valley Power Station

Prepared in Response to NRC IE Bulletin 81-03

Prepared by: John S. Patterson
J. S. Patterson

Reviewed by: R. T. Zabowski
R. T. Zabowski

Approved by: M. Coppola
M. Coppola

Date: 5/26/81

Attachment

Response to IE Bulletin No. 81-03 of the Nuclear Regulatory Commission

Flow Blockage of Cooling Water To Safety System Components
by Corbicula at the Beaver Valley Power Station

The Duquesne Light Annual Ecological Report indicated that corbicula densities had increased greatly from 1975 through 1976, but declined in number from 1977 through 1978. During the year 1979, no clams were collected in the quarterly surveys. The last sample taken on September 23, 1980 also indicated no clams were present in the local environment. These samples were taken by three replicate ponar grab samples at mid-river and both river banks.

Shells, however, had been found in the main condenser inlet water boxes and chilled water condensers during past inspections. Therefore, a thorough investigation was performed to confirm the absence of clams in the fire protection and safety related systems at the Beaver Valley Power Station. The following systems and components were within the scope of this investigation:

- 1) Intake Structure Bays
- 2) Recirculation Spray Heat Exchangers
- 3) Reactor Plant Component Cooling Water Heat Exchangers
- 4) River Water In-line Strainers (RW-452 and -453)
- 5) Charging Pump Coolers
- 6) Control Room Ventilation System River Water Cooling Coils and Air Conditioning Condenser
- 7) Emergency Diesel Generator Coolers
- 8) Fire Protection System

A visual inspection was conducted on components of these potentially affected systems whenever it was possible. For components such as recirculation spray heat exchangers, where a visual inspection was not practicable, Operational Surveillance Test (OST) results were used to give conclusive evidence that flow blockage had not occurred. Results of the inspection are given below.

1. Intake Structure Bays

- a. Method of Inspection: OST 1.30.10, "Quarterly Silt Check"
- b. Extent of Fouling: No clam shells seen.
- c. Inspected: 1/23/81 by diver.
- d. Preventive Action: Test is performed four times a year to check and eliminate debris from the bays of the intake structure. Also, revisions have been made to the test procedure to visually inspect for clams.

2. Recirculation Spray Heat Exchangers 1A, 1B, 1C and 1D
 - a. Method of Inspection: BVT 1.1-2.30.1 and .2, "River Water Pump Head Capacity Curve Test"
 - b. Extent of Fouling: By directing water through the A and B river water headers, which supply the recirculation spray heat exchangers, acceptable flows of greater than 8000 gpm through the "A" header (1A and 1C heat exchangers) and "B" header (1B and 1D heat exchangers) were obtained (8000 gpm design flow).
 - c. Inspected: Heat exchangers 1A and 1C were tested on 12/19/80. Heat exchangers 1B and 1D were tested on 9/25/80.
 - d. Preventive Action: These tests were performed following pump modifications, however, OST 1.30.2 and .3, "RP River Water Pump 1A and 1B Tests," which directs flow through the heat exchangers, are performed monthly.
3. Reactor Plant Component Cooling Water Heat Exchangers CC-E-1A, 1B and 1C
 - a. Method of Inspection: Visual Inspection
 - b. Extent of Fouling: Fouling consisted mostly of silt and mud, however, a total of about 30 clam shells approximately 0.5 in. in diameter were removed.
 - c. Inspected: Each heat exchanger was opened and cleaned catching all solid debris in 55 gal. drums. The dates of the cleaning were 4/16/81, 4/22/81 and 5/4/81 (MWR 810846, 810847 and 810848).
 - d. Preventive Action: Because the plant normally operates with a maximum of two heat exchangers, the spare can be cleaned when performance is hindered by fouling.
4. River Water System In-line Strainers RW-452 and -453
 - a. Method of Inspection: Visual Inspection
 - b. Extent of Fouling: No clam shells found.
 - c. Inspected: Each strainer is removed and cleaned daily.
 - d. Preventive Action: Because the strainers prevent fouling in the charging pump oil coolers and control room air conditioner condensers, the strainer baskets are removed and cleaned daily, paying particular attention for shells.
5. Charging Pump Coolers
 - a. Method of Inspection: Visual Inspection
 - b. Extent of Fouling: No clam shells found.

- c. Inspected: The oil and gear coolers of charging pump 1A were cleaned on 4/21/81. A visual inspection was performed prior to cleaning in which no clam shells were seen.
 - d. Preventive Action: Because the six coolers are downstream of the river water strainers, it seems very unlikely that clam shells could cause clogging.
6. Emergency Diesel Generator Coolers
- a. Method of Inspection: Visual Inspection
 - b. Extent of Fouling: No clams were found.
 - c. Inspected: NSQC provided surveillance during the cleaning of each diesel generator cooler. Cooler EE-E-1A cleaned 4/28/80; cooler EE-E-1B cleaned 7/14/80. No clam shells were found.
 - d. Preventive Action: Maintenance surveillance inspections are performed every 18 months to insure performance will not be hindered by fouling (MSP 36.23).
7. Fire Protection System
- a. Method of Inspection: OST 1.33.3, "Fire Protection System Drain Test," OST 1.33.4, "Fire Protection System Hydrant Test, and OST 1.33.6, "Fire Protection System Annual Test."
 - b. Extent of Fouling: No clams were found in any of the fire protection systems.
 - c. Inspected: All systems were tested for an acceptable water supply. Also, all strainers were flushed or changed if necessary. (Drain Test OST 1.33.3 last performed 4/6/81; Hydrant Test OST 1.33.4 last performed 4/10/81; Annual Test OST 1.33.6 last performed 5/23/81.
 - d. Preventive Action: These tests are performed either monthly or annually to assure proper operation of the systems. Also, revisions have been made to procedure OST 1.33.6 to visually inspect for clams while performing the test.

After visually and operationally examining a representative sample of components within the scope of the inspection; it has been determined that clams are not a current problem at the Beaver Valley Power Station. Furthermore, the prevention and detection methods used presently and planned for the future should be adequate to avoid flow blockage or degradation due to clam debris.