DMB

Iowa Electric Light and Power Company

May 18, 1981
LDR-81-182

LARRY D. ROOT
ASSISTANT VICE PRESIDENT
NUCLEAR GENERATION

Mr. James G. Keppler, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

Re: Duane Arnold Energy Center

Subject: IE Bulletin 81-03, Flow Blockage of Cooling Water to Safety System Components by Corbicula Sp. and Mytilus Sp.

File: A-101a, NRC-2, Bulletin 81-03

Dear Mr. Keppler:

In response to your letter transmitting the subject NRC IE Bulletin concerning potential flow blockage problems of cooling water system components in power plants caused by Corbicula Sp. (Asiatic Clam) and Mytilus Sp. (Mussel), we have completed the recommended licensee actions. The D. B. McDonald Research, Inc., consulting ecologist firm of Iowa City, Iowa performed the research, data collection and analyses, and evaluation work to allow Iowa Electric Light and Power Co. (IELPC) to adequately address the subject NRC IE Bulletin concerns for the Duane Arnold Energy Center (DAEC). The following discussion is provided to briefly describe the actions taken at DAEC to address these NRC IE Bulletin concerns.

ITEM 1: Determine whether Corbicula sp. or Mytilus sp. is present in the vicinity of the station (local environment) in either the source or receiving water body. If the results of current field monitoring programs provide reasonable evidence that neither of these species is present in the local environment, no further action is necessary except for Items 4 and 5 in this section for holders of operating licenses.

RESPONSE: As discussed below, it has been determined that the Corbicula and Mytilus are not present in the vicinity of the DAEC. In order to make this determination, D. B. McDonald Research, Inc. reviewed Cedar River monitoring program history for DAEC and others and requested additional samples be collected from the DAEC intake structure, the cooling tower basins, and the discharge canal.

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The Asiatic Clam, Corbicula, is common in portions of the Iowa reach of the Mississippi River where suitable substrate is available. This organism requires relatively stable substrate and is normally absent from areas with a shifting sand/silt substrate such as normally found in the Cedar River in the vicinity of the DAEC. Corbicula has not been collected from the Cedar River in the vicinity of the DAEC during the routine Cedar River monitoring program which was implemented in April 1971. A single Corbicula was however collected in January of 1979 in the vicinity of the Lewis Access (approximately 4 miles upstream of the DAEC) by Hazleton Environmental Science Corporation personnel. The river bottom in this area is somewhat more stable than that present in the vicinity of the DAEC which may account for the presence of this form. No other records of this organism in the Cedar River were found.

Because Corbicula has been collected on one occasion from the Cedar River and is commonly found in power plant intakes on the Mississippi River, D. B. McDonald Research, Inc. directed personnel to collect samples from the DAEC intake structure, the cooling tower basins, and the discharge canal in order to determine if the organism had established itself within the system. On May 6, 1981 six Ponar dredge samples were taken behind the bar rack of the intake structure. The substrate in this area was found to consist of shifting sand and silt and contained no Corbicula. Three Ponar samples were collected from each of the cooling tower basins. The basins were dry at the time of sampling but the "sludge like" substrate contained no evidence of Corbicula. A clam rake was used to sample both ends of the discharge canal. No Corbicula were collected in spite of the fact that fairly stable gravel substrate capable of supporting the organism was present in the upper end of the canal.

The Asiatic Clam (Mytilus) is a marine form and obviously would not occur in the Cedar River.

ITEMS 2 AND 3:

RESPONSE: These items do not apply to the DAEC since it has been determined that Corbicula and Mytilus are not present in the vicinity (as discussed in Item 1 above).

ITEM 4: Describe methods either in use or planned (including implementation date) for preventing and detecting future flow blockage or degradation due to clams or mussels or shell debris. Include the following information in this description:

a. Evaluation of the potential for instrusion of the organisms into these systems due to low water level and high velocities in the intake structure expected during worst case conditions.

b. Evaluation of effectiveness of prevention and detection methods used in the past or present or planned for future use.

RESPONSE: The potential for intrusion of these organisms to DAEC is considered low, based upon the above described history and local environment.

No specific prevention or detection methods were used in the past since no Corbicula have been found in the immediate vicinity of the DAEC. In order to detect the possible intrusion of these organisms into the system in the future, the sampling of the intake structure, cooling tower basin and discharge canal will be repeated on a twice yearly basis. These determinations will be in addition to the routine benthic studies which will also be continued. This additional sampling was recommended by D. B. McDonald, Inc. and should be adequate to identify any intrusion of Corbicula into the DAEC systems in the future.

As has been previously stated in the subject NRC IE Bulletin the control of Corbicula in power plant cooling and safety systems has been proven to be difficult due to the resistance of the organism to chlorine and dessication. Illinois Power Company has reported some success in controlling Corbicula by the use of a mixture of sodium metabisulfite to produce anoxic conditions, and hydrogen sulfide. If these organisms are found in the DAEC systems at some point in the future the appropriate method of control will be determined at that time consistent with the scope and severity of the problem.

ITEM 5: Describe the actions taken in Items 1 through 3 above and include the following information:

a. Applicable portions of the environmental monitoring program including last sample date and results.

b. Components and systems affected.

c. Extent of fouling if any existed.

d. How and when fouling was discovered.

e. Corrective and preventive actions.

RESPONSE: The benthic macroinvertebrate community of the Cedar River has been routinely sampled three times yearly (spring, summer and fall) at four locations upstream and downstream of the DAEC by means of a Ponar dredge since 1971. In addition artificial substrate samples are also taken with Hester Dendy samplers above and below the station. As previously mentioned, no Corbicula have been collected during the course of the study. The last benthic samples were collected on

November 18, 1980. The current benthic monitoring program is sufficient to detect the establishment of the organism in the vicinity of the station but, as discussed in Item 1 above, will be expanded to include twice yearly sampling of the cooling water system.

Because of the absence of Corbicula in the river adjacent to the station and the failure to find the organism in the intake structure, the cooling tower basins or the discharge canal, it is not necessary to open and visually examine the DAEC safety system components. However, as part of the routine visual inspection program many of the plant system components which would most likely be affected by the intrusion of Corbicula have been inspected recently during the 1981 Refueling Outage. There were no indications of fouling or flow blockage caused by clams, mussels, or shells in any of DAEC system components inspected.

If you have any questions or desire further information regarding this IE Bulletin, please contact this office.

Approximately 20 man-hours were required to collect the additional samples, gather the necessary information, and prepare the response to this IE Bulletin.

This response is true and accurate to the best of my knowledge and belief.

IOWA ELECTRIC LIGHT AND POWER COMPANY

By: R. W. McGaughy
for Larry D. Root
Assistant Vice President,
Nuclear Generation

Subscribed and Sworn to before me this 22nd day of May, 1981, by R. W. McGaughy, for Larry D. Root.

Kathleen M. Herbert
Notary Public in and for the State of Iowa

LDR/DWT/pl

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