UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, ILLINOIS 60532-4352

January 27, 2020

Mr. Bryan C. Hanson
Senior VP, Exelon Generation Company, LLC
President and CNO, Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: CLINTON POWER STATION—NOTIFICATION OF AN NRC TRIENNIAL HEAT SINK PERFORMANCE INSPECTION AND REQUEST FOR INFORMATION; INSPECTION REPORT 05000461/2020002

Dear Mr. Hanson:

On April 6, 2020, the U.S. Nuclear Regulatory Commission (NRC) will begin the onsite portion of the Triennial Heat Sink Performance inspection at your Clinton Power Station. This inspection will be performed in accordance with NRC Baseline Inspection Procedure 71111.07.

In order to minimize the impact that the inspection has on the site and to ensure a productive inspection, we have enclosed a request for documents needed for the inspection. The documents have been divided into two groups.

- The first group lists information necessary for our initial inspection scoping activities. This information should be available to the lead inspector no later than February 25, 2020. By February 28, 2020, the inspector will communicate the initial selected set of approximately 2-3 risk significant heat exchangers.

- The second group is needed to support our in-office preparation activities. This set of documents, including the calculations associated with the selected heat exchangers, should be available to the inspector no later than March 27, 2020. This information should be separated for each selected component, especially if provided electronically (e.g., folder with component name that includes calculations, condition reports, maintenance history, etc.). During the in-office preparation activities, the inspector may identify additional information needed to support the inspection.

It is also requested that corrective action documents and/or responses developed during the inspection be provided to the inspector as the documents are generated.

All requested documents are to be for the time period from the onsite inspection period back to the documents that were provided in response to the previous Heat Sink Performance inspection. If no activities were accomplished in that time period, then the request applies to the last applicable document in the previous time period. It is important that these documents be as complete as possible, in order to minimize the number of documents requested during the preparation week or during the onsite inspection.

The lead inspector for this inspection is Lionel Rodriguez. We understand that our licensing contact for this inspection is Nicholas Santos of your organization. If there are any questions about the inspection or the material requested in the enclosure, please contact the lead inspector at (630) 829-9609 or via e-mail at Lionel.Rodriguez@nrc.gov.

This letter does not contain new or amended information collection requirements subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing information collection requirements were approved by the Office of Management and Budget, Control Number 3150-0011. The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid Office of Management and Budget Control Number.

This letter and its enclosure will be made available for public inspection and copying at http://www.nrc.gov/reading-rm/adams.html and at the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations*, Part 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Lionel Rodriguez, Reactor Engineer
Engineering Branch 2
Division of Reactor Safety

Docket No. 50–461
License No. NPF–62

Enclosure:
Triennial Heat Sink Performance
Inspection Document Request

cc: Distribution via LISTSERV®

Letter to Bryan C. Hanson from Lionel Rodriguez dated January 27, 2020.

SUBJECT: CLINTON POWER STATION—NOTIFICATION OF AN NRC TRIENNIAL HEAT SINK PERFORMANCE INSPECTION AND REQUEST FOR INFORMATION; INSPECTION REPORT 05000461/2020002

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TRIENNIAL HEAT SINK PERFORMANCE INSPECTION DOCUMENT REQUEST

Inspection Report: 05000461/2020002

Inspection Dates: April 6-10, 2020

Inspection Procedure: IP 71111.07, "Heat Sink Performance"

Lead Inspector: Lionel Rodriguez
(630) 829-9609
Lionel.Rodriguez@nrc.gov

Please provide the information electronically in "pdf" files, Excel, or other searchable formats, preferably on some portable electronic media (e.g., CD-ROM, DVD). The portable electronic media should contain descriptive names, and be indexed and hyperlinked to facilitate ease of use. The information can also be provided via an internet file sharing system, so long as the inspectors are provided access to the system throughout the inspection process and the system allows the files to be downloaded. Information in "lists" should contain enough information to be easily understood by someone who has knowledge of light water reactor technology.

I. Information Requested by February 25, 2020

1. List of the Generic Letter (GL) 89-13, "Service Water System Problems Affecting Safety-Related Equipment," heat exchangers in order of risk significance.

2. Copy of heat exchanger performance trending data tracked for each GL 89-13 heat exchanger.

3. List of Corrective Action Program (CAP) documents (with a short description) associated with GL 89-13 heat exchangers, heat sinks, silting, corrosion, fouling, aging, heat exchanger testing, ultimate heat sink (UHS), and safety-related service water systems for the previous three years or since the last CAP document list was sent to the U.S. Nuclear Regulatory Commission for the previous heat sink performance inspection. The list should include all corrective action program documents not on the last CAP document list.

4. Copy of any self-assessment done on any of the GL 89-13 heat exchangers, UHS, and safety-related service water systems since the last heat sink performance inspection.

5. Last two System Health Report(s) and maintenance rule system notebooks for all the GL 89-13 heat exchangers, UHS, and safety-related service water systems.

6. List of engineering-related operator workarounds (with a short description) associated with GL 89-13 heat exchangers. The requested documents are to be for the time period from the onsite inspection period back to the documents that were provided in response to the previous heat sink performance inspection.

7. List of permanent and temporary modifications (with a short description) associated with GL 89-13 heat exchangers, UHS, and safety-related service water systems. The requested documents are to be for the time period from the onsite inspection period back to the documents that were provided in response to the previous heat sink performance inspection.

8. A schedule of all inspections, cleanings, maintenance, or testing of any safety-related plant heat exchanger to be performed during the on-site portion of the inspection.

9. Electronic copies of the current Final Safety Analysis Report (FSAR), Technical Specifications, Technical Specifications Basis, and Technical Report Manual.

Information Requested by March 27, 2020

1. Copies of the GL 89-13 responses.

2. Copies of procedures developed to implement the recommendations of GL 89-13 (e.g., the GL 89-13 Heat Exchanger Program description).

3. For the specific heat exchangers selected:

    a. Copy of system description and design basis document for the heat exchangers (as applicable).

    b. Copy of the design specification, heat exchanger data sheets, and vendor documents including component drawings applicable for the selected heat exchangers.

    c. Copies of normal, abnormal, and emergency operating procedures associated with the selected heat exchangers.

    d. Copy of the operating procedure that ensures that the maximum cooling water system inlet temperature limit is not exceeded.

    e. Copies of the Aging Management Programs (AMP) and the implementing procedures that manage aging of the selected heat exchangers (as applicable).

    f. Information regarding any alarms which monitor on-line performance.

    g. Copy of the document which identifies the current number of tubes in service for each heat exchanger.

    h. Provide a list of calculations (with a short description) which currently apply to each heat exchanger.

    i. Provide the calculations or evaluations that:

        i. establish the limiting (maximum) design basis heat load required to be removed by each of these heat exchangers;

        ii. demonstrate the heat exchangers capacity to remove the limiting heat load;

iii. correlate surveillance testing and/or inspection results from these heat exchangers with design basis heat removal capability (e.g., basis for surveillance test and/or inspection acceptance criteria);

iv. establish the maximum number of tubes which can be plugged in each heat exchanger;

v. evaluate the potential for water hammer in each heat exchanger or associated piping; and

vi. evaluate excessive tube vibration in each heat exchanger and the documents that describe the controls that prevent heat exchanger degradation due to excessive flow induced vibration during operation.

j. Copies of the two most recent completed tests and evaluation data confirming thermal performance for those heat exchangers which are performance tested. Include documentation and procedures that identify the types, accuracy, and location of any special instrumentation used for the two most recently completed thermal performance tests for the heat exchangers (e.g., high accuracy ultrasonic flow instruments or temperature instruments). Include calibration records for the instruments used during these tests.

k. Copy of the document describing the inspection results of each heat exchanger. The requested documents are to be for the time period from the onsite inspection period back to the documents that were provided in response to the previous heat sink performance inspection.

l. Copies of the documents that verify the structural integrity of the heat exchanger (e.g., eddy current summary sheets, ultrasonic testing results, and visual inspection results).

m. The thermal performance testing, cleaning, and inspection maintenance schedule for each heat exchanger for the next 5 years.

n. Copy of the periodic flow testing at or near maximum design flow. The requested documents are to be for the time period from the onsite inspection period back to the documents that were provided in response to the previous heat sink performance inspection.

o. Copies of those documents that describe the methods taken to control water chemistry in the heat exchangers.

p. Copy of any operability determinations or other documentation of degradation associated with the heat exchangers or the systems that support the operation for the selected heat exchangers.

4. For the ultimate heat sink (UHS) and the safety-related service water systems (or equivalent):

a. Copy of system description and design basis document (as applicable).

b. Copy of any operability determinations or other documentation of degradation associated with the UHS and the safety-related service water systems.

c. Copy of the document (e.g., UFSAR or Technical Requirements Manual) that states the maximum cooling water system inlet temperature limit that still allows full licensed power operation of the nuclear reactor.

d. Copy of the construction code and design specification.

e. Copies of normal, abnormal, and emergency operating procedures associated with the UHS and safety-related service water systems including procedures for loss of these systems.

f. Copies of the AMPs and the implementing procedures that manage aging of the UHS (including the intake structure) and the safety-related service water systems (as applicable).

g. Copies of CAP documents associated with water hammer or hydraulic transients in the safety-related service water systems since the last heat sink performance inspection.

h. If available, provide an electronic copy of piping and instrumentation diagrams (P&IDs) for the safety-related service water systems, including the intake structure.

i. Provide a list of calculations (with a short description), which currently apply to UHS and safety-related service water systems.

j. Provide a list of instruments (with a short description) associated with automatic or alarm functions for the UHS and safety-related service water systems.

k. Provide a list of any design change (with a short description) performed on the UHS or safety-related service water systems since the last heat sink performance inspection.

l. For the review of the performance testing of the safety-related service water system (or equivalent) and the UHS:

    i. Copies of the last two performance tests, such as the ASME in-service test (IST), for the pumps, valves, and, if applicable, the cooling tower fans in the safety-related service water system. Include the IST program basis document for each component. If the components are not performance tested, please provide documentation verifying performance by the methods actually used.

    ii. Copies of the documents that demonstrate that flow balance testing was performed during the last three years. If the last flow test was performed longer than three years, then provide the last flow test.

    iii. Copies of the documents that demonstrate that flow balance testing will continue to be periodically done in the future.

iv. Copies of procedures used to monitor interface valves between: (1) the safety related section of the service water system and the non-safety related section; and (2) separate trains of the service water system (i.e., train cross tie valves). Include completed results of the monitoring. The requested documents are to be for the time period from the onsite inspection period back to the documents that were provided in response to the previous heat sink performance inspection.

v. Copies of the procedures that verify the performance of risk significant non-safety functions of the safety-related service water system (or equivalent) and the UHS. Include completed results of the verifications. The requested documents are to be for the time period from the onsite inspection period back to the documents that were provided in response to the previous heat sink performance inspection.

m. For the review associated with the system walkdown of the service water system:

i. Copies of the testing, inspection, or monitoring program results for buried or inaccessible piping and the associated implementing procedures. The requested documents are to be for the time period from the onsite inspection period back to the documents that were provided in response to the previous heat sink performance inspection.

ii. Copies of the ultrasonic test results and/or visual inspections that verify the structural integrity of the piping.

iii. Copies of the results for monitoring, assessing, and dispositioning active thru wall pipe leaks, including structural evaluations and/or planned corrective actions. Include the implementing procedures.

iv. History of any thru wall pipe leak on the system. The requested documents are to be for the time period from the onsite inspection period back to the documents that were provided in response to the previous heat sink performance inspection.

v. Copies of the documents associated with the periodic inspection program used to detect protective coating failure, corrosion, and erosion.

vi. Copies of the IST vibration monitoring results and operational history for deep draft vertical pumps, if applicable. The requested documents are to be for the time period from the onsite inspection period back to the documents that were provided in response to the previous heat sink performance inspection.

If the information requested above will not be available by the dates specified, please contact Lionel Rodriguez as soon as possible at (630) 829-9609 or e-mail Lionel.Rodriguez@nrc.gov.