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

January 25, 2019

Mr. Charles Arnone
Vice President, Operations
Entergy Nuclear Operations, Inc.
Palisades Nuclear Plant
27780 Blue Star Memorial Highway
Covert, MI 49043–9530

SUBJECT: PALISADES NUCLEAR PLANT—NOTIFICATION OF AN NRC TRIENNIAL HEAT SINK PERFORMANCE INSPECTION AND REQUEST FOR INFORMATION; INSPECTION REPORT 05000255/2019002

Dear Mr. Arnone:

On Monday, April 8, 2019, the U.S. Nuclear Regulatory Commission (NRC) will begin the onsite portion of the Triennial Heat Sink Performance Inspection at your Palisades Nuclear Plant. 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 document request have been divided into three 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 4, 2019. By February 15, 2019, the lead 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 at the Regional Office no later than March 25, 2019. 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.

- The last group is the needed additional information identified during our in-office preparation activities. This information should be available onsite to the inspector on April 8, 2019. It is also requested that corrective action documents and/or questions 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 Michael A. Jones Jr. We understand that our licensing contact for this inspection is Barb Dotson of your organization. If there are any questions about the inspection or the material requested in the enclosure, please contact the lead inspector at 630-829-9745 or via e-mail at Michael.Jones@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/

Michael A. Jones Jr, Reactor Engineer
Engineering Branch 2
Division of Reactor Safety

Docket No. 50-255; 72-007
License No. DPR–20

Enclosure:
Document Request for Triennial Heat Sink
Performance Inspection

cc: Distribution via LISTSERV®

Letter to Charles Arnone from Michael A. Jones Jr. dated January 25, 2019.

SUBJECT: PALISADES NUCLEAR PLANT—NOTIFICATION OF AN NRC TRIENNIAL HEAT SINK PERFORMANCE INSPECTION AND REQUEST FOR INFORMATION; INSPECTION REPORT 05000255/2019002

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DOCUMENT REQUEST FOR TRIENNIAL HEAT SINK PERFORMANCE INSPECTION

Inspection Report: 05000255/2019002

Inspection Dates: April 8, 2019, through April 12, 2019

Inspection Procedure: Inspection Procedure 71111.07, "Heat Sink Performance"

Lead Inspector: Michael A. Jones Jr.
630-829-9745
Michael.Jones@nrc.gov

I. Information Requested By February 4, 2019

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 documents (with a short description) associated with GL 89-13 heat exchangers, heat sinks, silting, corrosion, fouling, or heat exchanger testing, for the previous 3 years or since the last Corrective Action Program document list was sent to the U.S. Nuclear Regulatory Commission for the previous Heat Sink Performance Inspection.

4. Copy of any self-assessment done on any of GL 89-13 heat exchangers.

5. Last two System Health Report(s) and maintenance rule system notebooks for all the GL 89-13 heat exchangers.

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. 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. Provide a list of any design change (with a short description) performed on the Ultimate Heat Sink (UHS) or 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.

9. Electronic copies of Updated Final Safety Analysis Report, Technical Specifications, Technical Specifications Bases, and Technical Requirements Manual.

II Information Requested By March 25, 2019

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. Copies of the selected Corrective Action Program documents.

4. Copies of the selected modifications, if any.

5. 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 construction code, Design Specification, heat exchanger data sheets, and vendor documents including component drawings applicable for the heat exchangers.

   c. Copy of the following calculations for each selected heat exchanger that:

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

      v. evaluate excessive tube vibration in each heat exchanger.

   d. 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.

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

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

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

h. Copies of the two most recent completed tests and evaluation data confirming thermal performance for those heat exchangers which are performance tested.

i. 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.

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

k. 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.

l. Copy of the document which identifies the current number of tubes in service for each heat exchanger and the supporting calculation which establishes the maximum number of tubes which can be plugged in each heat exchanger.

m. Copy of the document establishing the repair criteria (plugging limit) for degraded tubes which are identified in each heat exchanger.

n. 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).

o. The cleaning and inspection maintenance schedule for each heat exchanger for the next 5 years.

6. For the UHS and the safety-related service water system (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 system.

c. Copy of the document (e.g., Technical Requirements Manual, procedure) 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 corrective action documents associated with waterhammer or hydraulic transients in the service water system since the last Heat Sink Inspection.

g. If available, provide an electronic copy of piping and instrumentation diagrams for the service water system, including the intake structure.

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

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

j. Copies of calculations and surveillances that determine the UHS reservoir capacity and heat transfer capability.

k. Copies of the documents associated with the monitoring, trending, and remediation of silt accumulation at the service water pump bay.

l. Copies of surveillance procedures and testing results performed on the instrumentation relied upon to determine UHS reservoir capability. 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. Inspections and/or maintenance related to preventing macrofouling (e.g., silt, dead mussel shells, or debris) and biotic fouling (e.g., fish, algae, grass, or kelp). 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.

n. Copies of documents associated with the monitoring of pump performance for potential strong-pump vs. weak-pump interaction.

o. Copies of the last two performance tests, such as the American Society of Mechanical Engineers in-service test, for the pumps and valves. If the components are not performance tested, please provide documentation verifying performance by the methods actually used.

p. Copies of the documents that demonstrate that flow balance testing was performed during the last 3 years. If the last flow test was performed longer than 3 years, then provide the last flow test.

q. Copies of procedures used to monitor interface valves between the safety-related section of the service water system and the non safety-related section and the associated results. 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.

r. Copies of the procedures that verify the performance of risk significant non-safety functions and the associated results. 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.

s. Copies of the testing, inspection, or monitoring program procedures for buried or inaccessible piping and the associated results. 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.

t. 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.

u. Copies of the documents associated with the Periodic Inspection Program used to detect protective coating failure, corrosion, and erosion.

v. 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.

7. A schedule of all inspections, cleanings, maintenance, or testing of <u>any</u> safety-related plant heat exchanger to be performed during the onsite portion of the inspection.

III Information Requested to be Available on First Day of Inspection, April 8, 2019

1. During the in-office preparation activities, the team will be making final selections and may identify additional information needed to support the inspection. The lead inspector will provide a list of any additional information needed during the week of April 1, 2019.

If you have questions regarding the information requested, please contact the lead inspector.