



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
2443 WARRENVILLE RD. SUITE 210  
LISLE, IL 60532-4352

January 19, 2017

Mr. Brian D. Boles  
Site Vice President  
FirstEnergy Nuclear Operating Co.  
Davis-Besse Nuclear Power Station  
5501 N. State Rte. 2, Mail Stop A-DB-3080  
Oak Harbor, OH 43449-9760

**SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION – NOTIFICATION OF AN NRC  
TRIENNIAL HEAT SINK PERFORMANCE INSPECTION AND REQUEST FOR  
INFORMATION; INSPECTION REPORT 05000346/2017001**

Dear Mr. Boles:

On Monday, March 20, 2017, the U.S. Nuclear Regulatory Commission (NRC) will begin the onsite portion of the Triennial Heat Sink Performance Inspection at your Davis-Besse Nuclear Power Station. This inspection will be performed in accordance with NRC baseline Inspection Procedure 71111.07, "Heat Sink Performance."

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 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 10, 2017. By February 17, 2017, 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 at the Regional Office no later than March 6, 2017. This information should be separated for each selected component, especially if provided electronically (e.g., folder with component name that includes calculations, condition reports, and maintenance history). During the in-office preparation activities, the inspector may identify additional information needed to support the inspection.
- The last group includes the additional information above as well as plant specific reference material. This information should be available onsite to the inspectors on March 20, 2017. 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.

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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 Mr. Néstor J. Félix-Adorno. We understand that our licensing contact for this inspection is Mr. P. McCloskey of your organization. If there are any questions about the inspection or the material requested in the enclosure, please contact the lead inspector at 630-829-9739 or via e-mail at [Nestor.Feliz-Adorno@nrc.gov](mailto:Nestor.Feliz-Adorno@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, its enclosure, and your response (if any) 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 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

*/RA/*

Néstor J. Félix-Adorno, Senior Reactor Inspector  
Engineering Branch 2  
Division of Reactor Safety

Docket No. 50-346  
License No. NPF-3

Enclosure:  
Triennial Heat Sink Performance  
Inspection Document Request

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## TRIENNIAL HEAT SINK PERFORMANCE INSPECTION DOCUMENT REQUEST

**Inspection Report:** 05000346/2017001

**Inspection Dates:** March 20 - 24, 2017

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

**Lead Inspector:** Néstor J. Félix-Adorno  
630 829-9739  
[Nestor.Feliz-Adorno@nrc.gov](mailto:Nestor.Feliz-Adorno@nrc.gov)

### ***I. Information Requested By February 10, 2017***

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. Information in "lists" should contain enough information to be easily understood by someone who has knowledge of light water reactor technology.

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, heat exchanger testing, ultimate heat sink (UHS), and safety-related service and closed cooling water systems for the previous 3 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 CAP documents not on the last CAP document list.
4. Copy of any self-assessment done on any of GL 89-13 heat exchangers, UHS, and safety-related service and closed cooling 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 and closed cooling water systems.
6. List of engineering-related operator workarounds (with a short description) associated with GL 89-13 heat exchangers, UHS, and safety-related service and closed cooling 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.

Enclosure

## TRIENNIAL HEAT SINK PERFORMANCE INSPECTION DOCUMENT REQUEST

7. List of permanent and temporary modifications (with a short description) associated with GL 89-13 heat exchangers, UHS, and safety-related service and closed cooling 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. Electronic copies of the current Final Safety Analysis Report, Technical Specifications, Technical Specifications Basis, and Technical Report Manual.

### ***II. Information Requested By March 6, 2017***

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. Information in "lists" should contain enough information to be easily understood by someone who has knowledge of light water reactor technology.

1. Copies of the GL 89-13 responses and commitments.
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. For the specific heat exchangers selected:
  - a. Copy of system description and design basis document for the heat exchangers (as applicable).
  - b. Provide a list of calculations (with a short description) which currently apply to each heat exchanger.
  - c. Provide the calculations or evaluations 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.

## TRIENNIAL HEAT SINK PERFORMANCE INSPECTION DOCUMENT REQUEST

- e. Copy of the design specification, heat exchanger data sheets, and vendor documents including component drawings applicable for the selected heat exchangers.
  - f. Copies of normal, abnormal, and emergency operating procedures associated with the selected heat exchangers.
5. For the UHS and the closed cooling 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 closed cooling water systems.
  - c. Copy of the document (e.g., Updated Final Safety Analysis Report, 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 system description and design basis document (as applicable).
  - e. Copy of the construction code and Design Specification.
  - f. Copies of normal, abnormal, and emergency operating procedures associated with the UHS, safety-related service water, and closed cooling water systems including procedures for loss of these systems.
  - g. If available, provide an electronic copy of piping and instrumentation diagrams for the service water system and closed cooling water systems, including the intake structure.
  - h. Provide a list of calculations (with a short description), which currently apply to UHS and closed cooling water systems.
  - i. Provide a list of instruments (with a short description) associated with automatic or alarm functions for the closed cooling water system and UHS.
  - j. Provide a list of any design change (with a short description) performed on the UHS, safety-related service water, or closed cooling water systems since the last heat sink performance inspection.
6. A schedule of all inspections, cleanings, maintenance, or testing of any 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, March 20, 2017**

- 1. For the specific heat exchangers selected.
  - a. Copies of the two most recent completed tests and evaluation data confirming thermal performance for those heat exchangers which are performance tested.

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- b. 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.
  - c. Information regarding any alarms which monitor online performance.
  - d. 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.
  - e. The cleaning and inspection maintenance schedule for each heat exchanger for the next 5 years.
  - f. Copy of the operating procedure that ensures that the maximum cooling water system inlet temperature limit is not exceeded
  - g. 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.
  - h. 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.
  - i. Copy of the document establishing the repair criteria (plugging limit) for degraded tubes which are identified in each heat exchanger.
  - j. 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).
  - k. Copies of those documents that describe the methods taken to control water chemistry in the heat exchangers.
2. For the review of the closed cooling water system and UHS:
- a. Copies of the toe of the weir or embankment inspection procedures 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.
  - b. Copies of the inspection procedures of the rip rap protection placed on excavated side slopes 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.

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- c. Copies of the dam inspection procedures that monitor the integrity of the UHS 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.
- d. Copies of calculations and surveillances (procedures and test results) that determine the UHS reservoir capacity and heat transfer 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.
- e. 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.
- f. Copies of the inspection procedures for the verification of the structural integrity of underwater UHS portions 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.
- g. Copies of the maintenance and/or inspection procedures for UHS biotic and/or macrofouling intrusion and the associated results including underwater diving inspections and/or sediment removal activities. 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.
- h. Copies of the testing, inspection, or monitoring program procedures for buried or inaccessible closed cooling water system 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.
- i. Copies of the ultrasonic test results and/or visual inspections that verify the structural integrity of the closed cooling water system piping.
- j. Copies of the procedures to monitor, assess, and disposition active thru wall pipe leaks in the closed cooling water system, including structural evaluations and/or planned corrective actions.
- k. History of any thru wall pipe leak on the closed cooling water 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.
- l. Copies of closed cooling water system make-up trends (e.g., operating logs, system engineering logs). 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.

## TRIENNIAL HEAT SINK PERFORMANCE INSPECTION DOCUMENT REQUEST

- m. Copies of the documents associated with the closed cooling water system periodic inspection program used to detect protective coating failure, corrosion, and erosion.
- n. Hardcopies of piping and instrumentation diagrams for the closed cooling water system.

If the information requested above will not be available, please contact Néstor J. Félix-Adorno as soon as possible at 630-829-9739 or e-mail [Nestor.Feliz-Adorno@nrc.gov](mailto:Nestor.Feliz-Adorno@nrc.gov).



B. Boles

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Letter to Brian D. Boles from Néstor J. Félix-Adorno dated January 19, 2017

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