



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION II  
245 PEACHTREE CENTER AVENUE NE, SUITE 1200  
ATLANTA, GEORGIA 30303-1257

July 10, 2015

Mr. Joseph W. Shea  
Vice President, Nuclear Licensing  
Tennessee Valley Authority  
11101 Market Street, LP 3D-C  
Chattanooga, TN 37402-2801

**SUBJECT: WATTS BAR NUCLEAR PLANT, UNIT 2– NOTIFICATION OF INSPECTION  
AND REQUEST FOR INFORMATION**

Dear Mr. Shea:

The U.S. Nuclear Regulatory Commission (NRC) will perform the heat sink inspection at the Watts Bar 2 Nuclear Plant, Units 1 and 2, from August 3 – 7, 2015. In order to minimize the impact to your onsite resources and ensure a productive inspection, we have enclosed a request for information needed to prepare and implement the inspection. We have discussed the schedule of this inspection activity with Mr. Dorris Charlton of your organization. If there are any questions about this inspection or the material requested, please contact the lead inspector, Mr. Abhijit Sengupta at 404-997-4430.

In accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public inspections, exemptions, requests for withholding," of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, its Enclosure, and your response (if any) will be available electronically for public inspection in the NRC's Public Document Room, or from the Publicly Available Records

(PARS) component of the NRC's Agencywide Documents Access and Management System (ADAMS); accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Shakur A. Walker, Chief  
Engineering Branch 3  
Division of Reactor Safety

Docket No. 50-391  
License No. CPPR-92

Enclosure:  
Request for Information Heat Sink  
Performance Inspection

cc: Distribution via Listserv

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OFFICE	RII:DRS/EB3	RII:DRS/EB3					
SIGNATURE	AXS2	SAW4					
NAME	A. Sengupta	S. Walker					
DATE	7/ 10 /2015	7/ 10 /2015					
E-MAIL COPY	<b>YES</b> NO	<b>YES</b> NO					

Official Record Copy

**REQUEST FOR INFORMATION – HEAT SINK PERFORMANCE INSPECTION**

Site: Watts Bar 2 Nuclear Plant, Unit 1

Inspection Dates: August 3 – 7, 2015

Inspection Procedures: Inspection Procedure 71111.07, "Heat Sink Performance" Review, dated July 6, 2010 (Sections 02.02.b)

Inspector(s): Abhijit Sengupta, Reactor Inspector

This request for information has been divided into two groups. The first group (Section "A" of this Enclosure) identifies information to be provided prior to the inspection, to facilitate the selection of inspection samples, and ensure that the inspectors are adequately prepared. The second group (Section "B" of this Enclosure) identifies additional information needed during the onsite inspection week for the selected inspection samples. It is important that all of these documents are up-to-date, and complete, in order to minimize the number of additional documents requested during the preparation and/or the onsite portions of the inspection.

#### **A. Information Requested for In-Office Preparation**

The following information should be sent to the Region II office in hard copy or electronic format (preferred), in care of Abhijit Sengupta by July 24, 2015, to facilitate the selection of specific items that will be reviewed during the onsite inspection week. The inspector will select specific items from the information provided for Section A.1 below, and then request additional documents needed during the onsite inspection week, as discussed in Section B.1 of this Enclosure. We ask that the specific items selected from the lists be available and ready for review on the first day of inspection. Please provide requested documentation in electronic format if possible. If requested documents are large and only hard copy formats are available, please inform the inspector and provide subject documentation during the first day of the onsite inspection. If you have any questions regarding this information request, please call the inspector as soon as possible.

##### **A.1 Heat Exchangers and Service Water Equipment**

- (a) For the component cooling system (CCS) heat exchangers, provide the program documents that govern the performance monitoring of these heat exchangers, including testing methods and frequency, inspection methods and frequency, maintenance, monitoring of biotic-fouling and macro-fouling, and chemistry control, as applicable.
- (b) List of risk-significant nonsafety-related functions supported by the CCS system.
- (c) Response to NRC Generic Letter (GL) 89-13, "Service Water System Problems Affecting Safety-Related Equipment," including any regulatory commitments made to the NRC in response to this GL, or other regulatory commitments associated with service water system and ultimate heat sink (UHS) performance.
- (d) Latest version of the Updated Final Safety Analysis Report (UFSAR) Chapters addressing essential raw cooling water (ERCW) system and UHS design.
- (e) Basic ERCW and CCS system flow diagrams.
- (f) System Health Reports for the last 3 years associated with the CCS system as applicable.
- (g) List of components or systems in 10 CFR 50.65 Maintenance Rule a(1) status due to performance issues associated with the CCS system.

- (h) List of corrective action documents (with a brief description) in the last 3 years for CCS-related issues, including conditions adverse to quality that have received a Root Cause Analysis, or an elevated severity level in the site's Corrective Action Program (CAP).
- (i) Industry operating experience (OE) events in the last 3 years related to CCS system that have been evaluated through the site's OE or CAP.
- (j) List of applicable Codes and Industry Guidelines currently used for the performance monitoring of CCS heat exchangers.
- (k) List of safety-related with nonsafety-related valve interfaces that require isolation during design basis events related to CCS.
- (l) List of design changes to the CCS system in the last 3 years.
- (m) As applicable, provide a list of historical through-wall leaks in CCS System piping for the last 3 years. Please include the location of the leak(s) and corrective actions taken.
- (n) Contact information for licensing and engineering staff supporting the inspection.

**B. Information to be provided onsite to the inspector at the entrance meeting (August 3, 2015):**

**B.1 Heat Exchangers Equipment**

For the CCS, the inspector will request the items listed below, as applicable.

- (a) Updated list of technical and licensing point of contacts.
- (b) Copies of selected corrective action documents, including supporting documents such as cause evaluations, corrective action plans, work orders, etc. This item is related to Inspection Procedure (IP) 71111.07, Section 02.03.
- (c) Copies of evaluations and associated corrective actions for selected OE events. This item is related to IP 71111.07, Section 02.03.
- (d) For the CCS, provide documentation associated with the items listed below. These items are related to IP 71111.07, Section 02.02.b.
  - Performance testing methodology and results for the last 3 years, as applicable.
    - i. The selected test methodology is consistent with accepted industry practices, or equivalent.
    - ii. Test conditions (e.g., differential temperatures, differential pressures, and flows) are consistent with the selected methodology.
    - iii. Test acceptance criteria (e.g., fouling factors, heat transfer coefficients) are consistent with the design basis values.
    - iv. Test results have appropriately considered differences between testing conditions and design conditions (functional testing at design heat removal rate may not be practical).

- v. Frequency of testing based on trending of test results is sufficient (based on trending data) to detect degradation prior to loss of heat removal capabilities below design basis values.
  - vi. Test results have considered test instrument inaccuracies and differences.
  - vii. Tube and shell side heat loads are equal if adequate information is available in test results to calculate these two values.
- As applicable, inspection/cleaning methods and results of performance inspections for the last 3 years, including eddy current (EC) inspections to determine the structural integrity of the heat exchanger. For EC inspections, please include examination reports, examiner qualification records, and associated corrective action documents.
  - Operating data demonstrating that the heat exchanger's condition and operation is consistent with design assumptions in heat transfer calculations, and as described in the UFSAR.
  - Periodic flow test results at/or near maximum design flow.
  - Engineering evaluations addressing heat exchanger susceptibility to water hammer, and measures in place to address potential water hammer concerns.
  - Plant operating procedures showing the controls and operational limits in place to prevent heat exchanger degradation, due to excessive flow-induced vibration during operation.
  - Current number of plugged tubes relative to the pre-established plugging limits in design calculations.
- (e) Please have knowledgeable staff available during the onsite inspection to support walkdowns of selected plant structures, systems, and components associated with the ERCW system and CCS.

Inspector Contact Information:

Abhijit Sengupta  
Reactor Inspector  
404-997-4420  
[Abhijit.Sengupta@nrc.gov](mailto:Abhijit.Sengupta@nrc.gov)

Mailing Address:

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