



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

April 20, 2015

Joseph W. Shea
Vice President, Nuclear Licensing
Tennessee Valley Authority
1101 Market Street, LP 3D-C
Chattanooga, TN 37402

**SUBJECT: SEQUOYAH NUCLEAR STATION – NOTIFICATION OF INSPECTION AND
REQUEST FOR INFORMATION**

Dear Mr. Shea:

The U.S. Nuclear Regulatory Commission (NRC) will perform the baseline heat sink (HS) inspection at your Sequoyah Nuclear Station 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. Zachary Kitts of your organization. If there are any questions about this inspection or the material requested, please contact the lead inspector, Mr. Joel Rivera-Ortiz, at 404-997-4825.

In accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public inspections, exemptions, requests for withholding," of the NRC's "Rules of Practice," 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

J. Shea

2

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 Nos. 50-327 and 50-328
License Nos. DPR-77 and DPR-79

Enclosure:
Request for Information Heat Sink
Performance Inspection

cc: Distribution via Listserv

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/

J. Shea

2

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

Docket Nos. 50-327 and 50-328
License Nos. DPR-77 and DPR-79

Enclosure:
Request for Information Heat Sink
Performance Inspection

cc: Distribution via Listserv

DISTRIBUTION:

M. King, RII, DRP
E. Michel, RII, SR PE
J. Quinones-Navarro, RII, PE
S. Roberts, RII, RIDP
G. Smith, RII, SRI
W. Deschaine, RII, RI
P. Cooper, RII, Acting RI
S. Price, RII, ORA/RC
L. Gibson, RII, EICS
RIDSNRDIRS
PUBLIC

PUBLICLY AVAILABLE NON-PUBLICLY AVAILABLE SENSITIVE NON-SENSITIVE

ADAMS: Yes ACCESSION NUMBER: ML15111A470 SUNSI REVIEW COMPLETE FORM 665 ATTACHED

OFFICE	RII:DRS/EB3	RII:DRS/EB3					
SIGNATURE	JER6	SAW4					
NAME	J. Rivera	S. Walker					
DATE	4/ 20 /2015	4/ 20 /2015					
E-MAIL COPY	YES NO	YES NO					

Official Record Copy

REQUEST FOR INFORMATION – HEAT SINK PERFORMANCE INSPECTION

Site: Sequoyah Nuclear Station, Units 1 and 2

Inspection Dates: August 3 – 7, 2015

Inspection Procedures: Inspection Procedure 71111.07, “Heat Sink Performance”
Triennial Review

Inspector(s): Joel Rivera-Ortiz, Sr. Reactor Inspector

This request for information has been divided into two groups. The first group (Section “A” of the 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 the 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 Joel Rivera-Ortiz by July 3, 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) List of heat exchangers and equipment cooled by service water (SW) directly or indirectly. Please indicate which heat exchangers are redundant or infrequently used.
- (b) For the heat exchangers listed in item (a) above, 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.
- (c) As applicable, provide a list of risk-significant components in the SW system and ultimate heat sink (UHS) with their respective risk ranking, and risk importance measures. Please include the heat exchangers listed for item (a) above in the list of risk-significant components.
- (d) List of risk-significant nonsafety-related functions supported by the SW system.

- (e) 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 SW system and UHS performance.
- (f) Design Basis documents associated with the SW system and the UHS. Please include a description of the UHS design for the site, particularly whether the UHS is above-ground encapsulated by embankments, weirs or excavated side slopes, underwater weir or excavation, forced draft cooling tower, or spray pond.
- (g) Latest version of the Updated Final Safety Analysis Report (UFSAR) Chapters addressing SW system and UHS design.
- (h) Basic SW system flow diagrams.
- (i) System Health Reports for the last 3 years associated with the SW system and systems that are cooled by SW.
- (j) List of components or systems in 10 CFR 50.65 Maintenance Rule a(1) status due to performance issues associated with the SW system.
- (k) List of corrective action documents (with a brief description) in the last 3 years for SW-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).
- (l) Industry operating experience (OE) events in the last 3 years related to SW system that have been evaluated through the site's OE or CAP.
- (m) List of applicable Codes and Industry Guidelines currently used for the performance monitoring of heat exchangers and UHS.
- (n) Provide the program documents that govern the performance monitoring of the UHS and its subcomponents like piping, intake screens, pumps, and valves; including testing methods and frequency, inspection methods and frequency, maintenance, monitoring of fouling, and chemistry control, as applicable.
- (o) Provide flow diagrams indicating buried or inaccessible piping in the SW system and UHS.
- (p) Program documents governing the inspection, testing, and monitoring of buried piping in the SW system and UHS.
- (q) List of safety-related with nonsafety-related valve interfaces that require isolation during design basis events.
- (r) List of design changes to the SW system and the UHS in the last 3 years.
- (s) As applicable, provide a list of historical through-wall leaks in SW piping for the last 3 years. Please include the location of the leak(s) and corrective actions taken.

- (t) 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 and Service Water Equipment

The inspector will select a sample of heat exchangers and/or UHS samples from the information provided for section A.1 above, as required by inspection procedure (IP) 71111.07, during in-office preparation. For the selected samples, 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 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 selected heat exchangers or equipment cooled by SW directly or indirectly, provide documentation associated with the items listed below. These items are related to IP 71111.07, section 02.02.a/b/c.
- Performance testing methodology and results for the last 3 years.
 - 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.
 - Results of chemistry control program for the last 3 years.
- (e) For selected above-ground UHS encapsulated by embankments, weirs, or excavated side slopes, provide documentation for the last 3 years associated with the items listed below. These items are related to IP 71111.07, section 02.02.d.
- Licensee, or third party, dam inspections for monitoring the integrity of the HS sink.
 - Monitoring results for verification of sufficient reservoir capacity.

- Results of visual or other inspections performed to check for any possible settlement or movement indicating loss of structural integrity, and/or capacity including sediment intrusion that may reduce capacity (for selected underwater UHS weirs or excavations only).

(f) For selected UHS such as a forced-draft cooling tower or spray pond, provide documentation for the last 3 years associated with the methods and results to verify:

- reservoir capacity
- periodic monitoring and trending of sediment buildup
- periodic performance monitoring of heat transfer capability
- performance monitoring of the UHS structural integrity

The information requested above is related to IP 71111.07, section 02.02.d.

(g) For selected operational samples of the SW system and UHS, provide documentation for the last 3 years associated with:

- selected design changes to the SW system and the UHS
- procedures for a loss of the SW system or UHS
- controls to prevent clogging due to macro-fouling through monitoring and trending
- results of biocide treatments for biotic control
- results of chemistry monitoring to ensure that adequate pH, calcium hardness, etc., are maintained (for fixed volume UHS only)
- results of pump performance monitoring for potential strong-pump weak-pump interaction in the SW system

The information requested above is related to IP 71111.07, section 02.02.d.

(h) For selected performance testing samples of the SW system and UHS, provide documentation for the last 3 years associated with:

- performance tests, such as American Society of Mechanical Engineers inservice tests, of selected components
- performance testing of isolation capabilities for interface valves between safety-related SW, and nonsafety-related or non-seismic piping systems
- SW flow balance test results
- performance of selected risk-significant nonsafety-related functions

The information requested above is related to IP 71111.07, section 02.02.d.

(i) Please have knowledgeable staff available during the on-site inspection to support walkdowns of selected plant structures, systems, and components associated with the SW system and UHS. This item is related to IP 71111.07, section 02.02.d.

Inspector Contact Information:

Joel Rivera-Ortiz

Sr. Reactor Inspector

404-997-4825

Joel.Rivera-Ortiz@nrc.gov

Mailing Address:

US NRC Region 2

Attn: Joel Rivera-Ortiz

Marquis One Tower

245 Peachtree Center Avenue, NE

Suite 1200

Atlanta, GA 30303