



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
1600 EAST LAMAR BOULEVARD  
ARLINGTON, TEXAS 76011-4511

June 17, 2021

Mr. Fadi Diya, Senior Vice President  
and Chief Nuclear Officer  
Ameren Missouri  
Callaway Plant  
8315 County Road 459  
Steedman, MO 65077

SUBJECT: CALLAWAY PLANT - NOTIFICATION OF NRC TRIENNIAL HEAT  
EXCHANGER/HEAT SINK PERFORMANCE INSPECTION (05000483/2021003)  
AND REQUEST FOR INFORMATION

Dear Mr. Diya:

The purpose of this letter is to notify you that U.S. Nuclear Regulatory Commission (NRC) staff will conduct the triennial portion of the heat exchanger/heat sink performance inspection at your Callaway Plant from September 13 – 17, 2021. The onsite phase of the inspection will consist of two reactor inspectors from the NRC's Region IV office for one week. The inspection will be conducted in accordance with NRC Inspection Procedure (IP) 71111, Attachment 07, "Heat Exchanger/Sink Performance," dated October 21, 2020.

The objectives of the inspection are to verify that: 1) any potential heat exchanger deficiencies which could mask degraded performance are identified, 2) any potential common-cause heat sink performance problems that have the potential to increase risk are identified, and 3) the licensee has adequately identified and resolved heat sink performance problems that could result in initiating events or affect multiple heat exchangers in mitigating systems and thereby increase risk.

To minimize the impact the inspection on the site and to ensure an efficient inspection, we have enclosed a request for documents needed for the inspection. It is important that these requests are fulfilled as completely and accurately as possible to minimize any additional requests during the preparation week or during the onsite 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 August 9, 2021. As soon as practicable, the lead inspector will communicate the initial selected set of 2-4 risk significant or safety-related heat exchangers and/or heat sinks.

- The second group of documents requested includes those items needed to support our in-office preparation activities. This set of documents, including calculations associated with the selected heat exchangers and/or heat sinks, should be available no later than August 30, 2021. This information should be separated for each inspection sample, especially if provided electronically. Note that the inspectors may identify additional information needed to support the inspection during this week and will communicate those requests as soon as practicable.
- The third group of documents requested includes the additional documentation identified during in-office preparation activities as well as other resource requests necessary to support our onsite inspection activities. The additional information or resources should be available throughout the week of onsite inspection activities beginning on September 13, 2021.

All requested documents are to be for the time period from the onsite inspection period back to the last triennial heat exchanger/heat sink performance inspection. If nothing addressing a request was performed in that time period, then the request applies to the last applicable document. If a request does not apply for any heat exchanger/heat sink sample, no response is necessary. Include all attachments to the requests, especially corrective action program documents.

We have discussed the schedule for this inspection with your staff and understand that our regulatory contact for this inspection will be Randy Pohlman of your Regulatory Affairs organization. If there are any questions about this inspection or the documents requested, please contact the lead inspector, Jonathan Braisted, by telephone at 817-200-1469 or by e-mail at [Jonathan.Braisted@nrc.gov](mailto:Jonathan.Braisted@nrc.gov).

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Sincerely,

David L.  
Proulx

Digitally signed by  
David L. Proulx  
Date: 2021.06.17  
10:36:59 -05'00'

David L. Proulx, Chief (Acting)  
Engineering Branch 1  
Division of Reactor Safety

Docket No.: 50-483  
License No.: NPF-30

Enclosure: Triennial Heat Exchanger/Heat Sink  
Performance Inspection Request  
for Information

cc w/ encl: Distribution via LISTSERV®

CALLAWAY PLANT – NOTIFICATION OF NRC TRIENNIAL HEAT EXCHANGER/HEAT SINK PERFORMANCE INSPECTION (05000483/2021003) AND REQUEST FOR INFORMATION – DATED June 17, 2021

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OFFICE	DRS/EB1	DRS/EB1				
NAME	JBraisted	DProulx				
SIGNATURE	<i>JDB</i>	<i>DLP</i>				
DATE	6/14/2021	6/9/2021				

**OFFICIAL RECORD COPY**

**Request for Information**  
**Triennial Heat Exchanger/Heat Sink Performance Inspection**  
Callaway Plant

Inspection Report: 05000483/2021003  
Inspection Dates: September 13 – 17, 2021  
Inspection Procedure: IP 71111.07, Triennial “Heat Exchanger/Sink Performance”  
Inspector(s): Jonathan Braisted, Reactor Inspector (Lead)  
Dustin Reinert, Reactor Inspector

***I. Information Requested by August 9, 2021:***

1. Heat exchanger/heat sink program documents, including NRC Generic Letter (GL) 89-13 or aging management programs
2. Responses to GL 89-13
3. Different requirements and/or commitments related to GL 89-13 or aging management programs
4. Heat exchanger/heat sink program self-assessments
5. Updated final safety analysis report (UFSAR), technical specifications (TSs), and TS bases
6. List of heat exchangers in order of risk significance
7. List of corrective action program documents related to heat exchangers/heat sinks

***II. Information Requested by August 30, 2021:***

1. For the selected heat exchangers that are directly cooled by the service water system:
  - a. Performance testing (or equivalent method) documentation, including procedure
  - b. Periodic flow testing and/or balancing documentation, including procedure
  - c. Inspection (visual, eddy-current, etc.) and cleaning documentation, including procedure
  - d. Tube plugging map
  - e. Biotic fouling and macrofouling treatment documentation, including procedure
  - f. Relevant design basis calculations

- g. Applicable system health report and design basis document
  - h. Relevant system piping and instrumentation diagrams
  - i. Heat exchanger design specification and heat exchanger data sheet
  - j. Heat exchanger preventative maintenance schedule
2. For the selected heat exchangers that are directly cooled by a closed loop cooling water system:
- a. Periodic flow testing and/or balancing documentation, including procedure
  - b. Inspection (visual, eddy-current, etc.) and cleaning documentation, including procedure
  - c. Tube plugging map
  - d. Evaluation of potential for water hammer
  - e. Chemical treatment documentation, including procedure
  - f. Relevant design basis calculations
  - g. Applicable system health report and design basis document
  - h. Relevant system piping and instrumentation diagrams
  - i. Heat exchanger design specification and heat exchanger data sheet
  - j. Heat exchanger preventive maintenance schedule
3. For the selected ultimate heat sink (UHS):
- a. Forced draft cooling tower or spray pond UHS:
    - i. Calculations demonstrating sufficient reservoir capacity
    - ii. Documentation of periodic monitoring and trending of sediment, including procedures
    - iii. Performance monitoring documentation of heat transfer capability, including procedures
    - iv. Performance monitoring documentation of UHS structural integrity, including procedures

- b. Operation of the service water system (SWS) and UHS:
  - i. List of modifications to the SWS and UHS
  - ii. Procedures for a loss of SWS or UHS
  - iii. Biotic fouling and macrofouling treatment documentation, including procedures
  - iv. Chemistry monitoring documentation, including procedures
  - v. Evaluation of strong-pump to weak-pump interactions
- c. Performance testing of the SWS and UHS:
  - i. Inservice testing documentation of SWS/UHS pumps, valves, and fans, including procedures
  - ii. Service water flow balance test documentation, including procedures
  - iii. Diagnostic testing documentation for valves that interface with safety-related service water and nonsafety-related or nonseismic piping systems
  - iv. Performance testing documentation of risk-significant nonsafety-related functions (or alignments), including procedures
- d. Service water and/or closed cooling water system:
  - i. Inaccessible pipe testing, inspection (visual, ultrasonic, etc.), and/or monitoring documentation, including procedure
  - ii. Evaluations of active thru wall pipe leaks
  - iii. Corrective action documents related to thru wall pipe leakage, including trend evaluations
  - iv. For closed cooling water systems, trend data on make-up to the system
  - v. Protective coatings inspection documentation, including procedure
  - vi. For deep draft vertical pumps, diagnostic testing (or equivalent method) documentation, including procedures
- e. Service water intake structure (SWIS):
  - i. Preventive maintenance schedule for traveling screens and strainers
  - ii. Corrective action documents related to traveling screens, strainers, trash racks, etc.
  - iii. SWS/UHS normal and abnormal operating procedures

- iv. SWIS inspection documentation regarding structural integrity and silting, including procedure
- v. Service water pump bay water level instrument documentation related to setpoints and calibration, including procedures
- vi. SWS/UHS water temperature instrumentation documentation related to setpoints and calibration, including procedures
- vii. Evaluations of potential for frazil ice formation
- viii. For underwater weir walls, evaluations of potential silt introduction

#### 4. UHS Containment Device or Dam

- a. For an above-ground UHS encapsulated by embankments, weirs or excavated side slopes:
  - i. Weir or embankment design documentation
  - ii. Licensee or third-party dam inspection documentation used to monitor the integrity or performance of the heat sink
  - iii. Calculations for sufficient reservoir capacity
  - iv. Significant debris or sediment build-up monitoring documentation in the UHS
  - v. Corrective action program documents related to debris, debris, structural integrity, seepage, settlement, rip rap, etc.
- b. For underwater UHS weirs, structures, or excavations:
  - i. Underwater weirs, structures, or excavations design documentation
  - ii. Settlement or movement related to structural integrity and/or capacity monitoring documentation, including procedures
  - iii. Sediment intrusion monitoring documentation, including procedures
  - iv. Calculations for sufficient capacity
  - v. Corrective action program documents related to settlement, movement, structural integrity, sediment, etc.



III. ***Additional Requests During Onsite Inspection Activities***

1. Supplemental requests identified during in-office preparation activities
2. Additional requests identified during onsite inspection activities
3. Discussions with relevant subject matter experts
4. Walkdowns of selected heat exchanger/heat sink samples
5. Corrective action program documents generated as a result of this inspection

If the information requested above will not be available, please contact Jonathan Braisted as soon as possible.

Inspector Contact Information:

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