



Memorandum from the Office of the Inspector General

July 15, 2026

John H. Dufner

REQUEST FOR FINAL ACTION – EVALUATION 2026-17606 – NUCLEAR SPENT FUEL MANAGEMENT

The Tennessee Valley Authority (TVA) operates Browns Ferry Nuclear Plant (Browns Ferry), Sequoyah Nuclear Plant (Sequoyah), and Watts Bar Nuclear Plant (Watts Bar), which have a combined generating capacity to power more than 4.5 million homes and businesses. During calendar years (CY) 2024 through 2025, these three nuclear plants used about 1,410 fuel assemblies combined. After spent nuclear fuel is removed from the reactor core at each of TVA's nuclear plants, it is maintained submerged in a spent fuel pool to cool. Once TVA's spent fuel has been cooled for at least 3 years, it is eligible to be put in dry cask storage.¹

TVA's Nuclear Fuel Management procedure establishes requirements for TVA's nuclear fuel related activities to comply with applicable technical specifications and regulatory requirements, licensing commitments, licensing and design bases, and additional commitments made due to industry practices. These requirements include (1) Quality Assurance (QA) audits of spent fuel activities, (2) routine dry cask inspections, and (3) aging management surveillance programs for both the spent fuel pool and dry cask systems. Due to the safety risk and regulatory requirements associated with storage of nuclear spent fuel, we performed an evaluation to determine if TVA was complying with selected inspection and storage requirements of spent fuel.

We determined TVA complied with inspection and storage requirements for spent fuel at TVA nuclear sites except for maintaining documentation of three daily dry cask inspections. Specifically, we found that TVA (1) performed QA audits as well as daily and annual dry cask inspections as required and (2) addressed all issues identified during the audits and inspections. Additionally, TVA conducted spent fuel pool and dry cask aging management surveillance tests that showed results within required technical specifications. However, TVA could not provide documentation for three daily dry cask inspections, which are required to be maintained in accordance with TVA's regulatory-approved Nuclear Quality Assurance Program.

We recommend the Vice President, Nuclear Engineering, reinforce the importance of maintaining inspection documentation. Prior to issuing a formal response, TVA management reviewed the draft report and provided informal comments that have been incorporated into the final report as appropriate. In TVA management's formal response to the draft report, they agreed with the recommendation and provided planned actions to address the recommendation. See the Appendix for TVA management's complete response.

¹ TVA uses a dry cask storage system that includes a vertically ventilated storage overpack constructed from a combination of steel and concrete.

BACKGROUND

The Nuclear Regulatory Commission (NRC) regulates storage methods for nuclear spent fuel after it has been removed from the reactor core. Spent nuclear fuel is maintained submerged under at least 20 feet of water in spent fuel pools, which provides adequate shielding from the radiation for anyone near the pool. Once TVA's spent fuel has been cooled for at least 3 years, it is eligible to be put in dry cask storage, surrounded by inert gas, and stored at an independent spent fuel storage facility.

Nuclear Power Group (NPG) Standard Programs and Processes (SPP) 08.1, *Nuclear Fuel Management*, establishes requirements for TVA's nuclear fuel related activities, which include the spent fuel pool, dry cask storage, and other nuclear spent fuel related activities. These requirements support compliance with applicable technical specifications and regulatory requirements, licensing commitments, licensing and design bases, and additional commitments made due to industry practices. The procedure also requires performance of two different aging management programs.

- The spent fuel pool neutron absorber material² monitoring program provides guidance for performing surveillance tests and management of the effects of aging on materials in the spent fuel pool. TVA is required to conduct these surveillance tests at least every 10 years at each plant, with the most recent being conducted at Sequoyah and Watts Bar during 2025.³
- The dry cask aging management program is initiated to assess the aging effects and mechanisms that could adversely affect the ability of the dry casks to perform their intended functions at the end of their initial license life. The initial inspections⁴ to fulfill this requirement were conducted at Sequoyah and Browns Ferry, during 2024 and 2025, respectively.

TVA's NRC-approved Nuclear Quality Assurance Plan also requires TVA to conduct Nuclear QA audits of nuclear spent fuel activities every 3 years. This includes identifying and correcting conditions adverse to quality as well as a review of corrective action documents. Additionally, in between QA audits, TVA is required to conduct evaluations to determine the need for additional audit activities. TVA last performed a QA audit of nuclear spent fuel activities in 2023 and an evaluation in 2024.

TVA's dry cask storage system requires performance of daily and annual dry cask inspections. Daily inspections are required to be performed once every 24 hours to ensure that dry cask inlet and outlet air ducts are free of blockage. Additionally, annual inspections are required to visually inspect exterior surfaces for coating deterioration, identification markings, and concrete pad condition.

² Neutron absorber materials are used in nuclear spent fuel storage to allow for storage at maximum packing density and control reactivity of spent nuclear fuel.

³ The spent fuel pool neutron absorber material surveillance test for Browns Ferry was last conducted in 2017; TVA plans to conduct another test later in 2026.

⁴ The initial inspection for Watts Bar is not due until 2031.

Due to the safety risk and regulatory requirements associated with storage of nuclear spent fuel, we performed an evaluation of TVA's management of nuclear spent fuel.

OBJECTIVE, SCOPE, AND METHODOLOGY

The objective of our evaluation was to determine if TVA was complying with selected inspection and storage requirements⁵ of spent fuel at TVA nuclear sites. The scope included CYs 2024 and 2025. To achieve our objective, we:

- Reviewed the following procedures to gain a better understanding of inspection and storage requirements:
 - NPG-SPP-08.1, *Nuclear Fuel Management*
 - NPG-SPP-07.9.3, *Conduct of Dry Cask Storage*
 - NPG-SPP-07.9.5, *Dry Cask Storage Aging Management Program for HI-STORM 100 Systems*
 - NPG-SPP-3.19, *Conduct of Quality Assurance Internal Audits*
 - 0-SR-DCS3.1.2.1, 0-SI-OPS-079-001.0, and 0-SI-79-2 (daily dry cask inspection instructions for Browns Ferry, Sequoyah, and Watts Bar, respectively).
 - BFN-DCS-100.11, SQN-DCS-100.11, and WBN-DCS-100.11 FW (annual dry cask inspection instructions for Browns Ferry, Sequoyah, and Watts Bar, respectively).
- Conducted a site visit to Browns Ferry to (1) observe nuclear spent fuel activities and (2) interview personnel involved to determine if dry cask loading, surveillance activities, and physical inspections were being performed as required.
- Reviewed the following documentation to determine if TVA performed QA activities, routine inspections, and aging management as required by the procedures:
 - Nuclear QA's 2023⁶ audit and 2024 second year evaluation.
 - Daily and annual dry cask inspection reports for Browns Ferry, Sequoyah, and Watts Bar during CYs 2024 through 2025.
 - Dry cask aging management inspection reports conducted at Browns Ferry and Sequoyah during CYs 2024 through 2025.
 - Spent fuel pool neutron absorber material monitoring program results conducted at Sequoyah and Watts Bar during 2025.

This evaluation was conducted in accordance with the Council of the Inspectors General on Integrity and Efficiency's *Quality Standards for Inspection and Evaluation*.

⁵ Our selected requirements included (1) QA audits and evaluations, (2) routine dry cask inspections, and (3) aging management inspections of the spent fuel pool and dry casks.

⁶ Due to the QA audit frequency occurrence not falling within our CYs 2024 through 2025 scope, we reviewed the most recent QA audit conducted.

FINDINGS

We determined TVA complied with inspection and storage requirements for spent fuel at TVA nuclear sites except for maintaining documentation of three daily dry cask inspections. Specifically, we found that TVA (1) performed QA audits as well as daily and annual dry cask inspections as required and (2) addressed all issues identified during the audits and inspections. Additionally, TVA conducted spent fuel pool and dry cask aging management surveillance tests that showed results within required technical specifications. However, TVA could not provide documentation for three daily dry cask inspections, which are required to be maintained in accordance with TVA's regulatory-approved Nuclear Quality Assurance Program.

NONCOMPLIANCE WITH DRY CASK INSPECTION DOCUMENTATION REQUIREMENTS

Dry casks at each nuclear plant are required to be inspected and documented once every 24 hours to ensure that dry cask inlet and outlet air ducts are free of blockage. Documentation requirements of the inspections include a checklist of tasks performed, a list of dry casks inspected, and signatures of personnel that performed the inspection. Our review of documentation indicated TVA completed all daily and dry cask inspections at all three plants during CYs 2024 and 2025. Although Sequoyah personnel were able to provide operational logs indicating the daily inspections were performed, they were unable to provide the daily dry cask inspection documentation packages for December 29, 2025, through December 31, 2025.

Additionally, the documentation packages for these inspections are considered QA records in accordance with TVA's NRC-approved Nuclear Quality Assurance Program. QA records are defined as records that furnish documentary evidence of the quality of items and activities affecting quality. According to the NRC, nuclear licensees shall maintain sufficient records to furnish evidence of activities affecting quality, and QA records must be identifiable and retrievable. However, unlike the daily dry cask inspection procedure for TVA's other two nuclear plants, Sequoyah's did not properly state that the documentation packages are considered QA records. After informing TVA Nuclear that the Sequoyah procedure did not include the requirement for daily inspections to be QA records, the daily dry cask inspection procedure was revised.

RECOMMENDATION

We recommend the Vice President, Nuclear Engineering, reinforce the importance of maintaining inspection documentation.

TVA Management's Comments – TVA management agreed with the recommendation and stated corrective action will include communication to operations and dry cask groups to reinforce QA record retention requirements. See the Appendix for TVA management's complete response.

Auditor's Response – We concur with TVA management's planned actions.

- - - - -

John H. Dufner
Page 5
July 15, 2026

This report is for your review and final action. Your written comments, which addressed your management decision and actions planned, have been included in the report. Please notify us when final action is complete. In accordance with the Inspector General Act of 1978, as amended, the Office of the Inspector General is required to report to Congress semiannually regarding evaluations that remain unresolved after 6 months from the date of report issuance.

If you have any questions or wish to discuss our observations, please contact Lindsay J. Denny, Director, Evaluations – Operations, at (865) 633-7349. We appreciate the courtesy and cooperation received from your staff during the evaluation.

A handwritten signature in black ink that reads "Greg Stinson". The signature is fluid and cursive, with the first name "Greg" and last name "Stinson" clearly distinguishable.

Greg Stinson
Assistant Inspector General
(Audits and Evaluations)

JAJ:FAJ

cc: TVA Board of Directors
Jessica E. Dufner
Lucia W. Harvey
Jill M. Matthews
Edward C. Meade
Matthew M. Rasmussen
Ronald R. Sanders II
Michael D. Skaggs
Bevin W. Taylor
Ben R. Wagner
OIG File No. 2026-17606

July 6, 2026

Greg Stinson, WT 2C-K

RESPONSE TO REQUEST FOR COMMENTS - Draft Evaluation 2026-17606 – Nuclear Spent Fuel Management

Thank you for the opportunity to review and comment on the draft report for Evaluation 2026-17606 – Nuclear Spent Fuel Management. We appreciate the thoroughness of the audit and the professionalism of your team throughout the evaluation process.

Recommendation

We recommend the Vice President, Nuclear Engineering, reinforce the importance of maintaining inspection documentation.

Response: Agree

We agree with the recommendation to reinforce the importance of maintaining inspection documentation for dry cask storage. As noted in your report, TVA has already taken corrective action by revising the Sequoyah procedure to clarify that daily dry cask inspection documentation packages are considered Quality Assurance (QA) records, consistent with requirements at our other nuclear sites.

To ensure completion and sustained compliance, TVA has captured this recommendation in Condition Report (CR) 2096599. This CR will be used to track the implementation and closure of the recommended action. The corrective action will include communication to operations and dry cask groups to reinforce QA record retention requirements.

We appreciate the OIG's recognition of TVA's overall compliance with inspection and storage requirements for spent fuel, and we are committed to continuous improvement in our nuclear fuel management processes. Should you require any additional information or clarification regarding our response or the actions taken, please do not hesitate to contact us.

Thank you again for your engagement and constructive feedback.



John H. Dufner
Vice President, Nuclear Engineering
LP 4A-C
KDH:JLA

Cc: Lucia W. Harvey
Kim D. Hulvey
John Anthony H. Jacosalem
Edward C. Meade

Matthew M. Rasmussen
Ronald R. Sanders II
OIG File No. 2026-17606