

From: [Wentzel, Michael](#)
To: [Taylor, Andrew Charles](#)
Subject: Sequoyah Nuclear Plant, Units 1 and 2 - Request for Additional Information Regarding Hydrologic UFSAR Update (EPID L-2020-LLA-0004)
Date: Wednesday, July 01, 2020 1:58:00 PM
Attachments: [Redacted - Requests for Additional Information Regarding the Sequoyah Hydrologic Analysis UFSAR Update \(EPID L-2020-LLA-0004\).pdf](#)

Dear Mr. Taylor:

By letter dated January 14, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20016A396), as supplemented by a letters dated February 18 and May 14, 2020 (ADAMS Accession Nos. ML20049H184 and ML20135H065, respectively), the Tennessee Valley Authority (TVA) submitted a license amendment request (LAR) for Sequoyah Nuclear Plant, Units 1 and 2. The proposed amendments would modify the licensing and design bases as described in the Updated Final Safety Analysis Report to incorporate a revised hydrologic analysis.

The U.S. Nuclear Regulatory Commission's (NRC's) Quality Assurance and Vendor Inspection Branch (IQVB) staff is reviewing the application and has identified areas where it needs additional information to support its review. The NRC staff's request for additional information (RAI) contains proprietary information. The redacted, non-proprietary version of the RAI is attached. The version containing proprietary information will be transmitted to you via the NRC's BOX – Enterprise File Synchronization and Sharing service. As previously discussed with you, the NRC staff requests your response to the RAI within 45 days of the date of this email.

If you have any questions, please contact me at (301) 415-6459 or michael.wentzel@nrc.gov.

Sincerely,

Michael Wentzel, Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

REQUEST FOR ADDITIONAL INFORMATION

LICENSE AMENDMENT REQUEST TO REVISE

THE UPDATED FINAL SAFETY ANALYSIS REPORT HYDROLOGIC ANALYSIS

TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-327 AND 50-328

By letter dated January 14, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20016A396), as supplemented by a letter dated February 18, 2020 (ADAMS Accession No. ML20049H184), Tennessee Valley Authority (TVA) submitted a license amendment request (LAR) for Sequoyah Nuclear Plant related to a new hydrologic analysis. The U.S. Nuclear Regulatory Commission (NRC) staff issued requests for additional information (RAIs) (ADAMS Accession No. ML20106F104) related to the software tools used in the new hydrologic analysis. By letter dated May 14, 2020 (ADAMS Accession No. ML20135H065), TVA submitted responses to the NRC staff's RAIs. The NRC staff is continuing to review the application and has identified areas where it needs additional information to support its review.

Question 1

Title 10 of the *Code of Federal Regulations* (10 CFR) 50.34(b)(6)(ii) requires information to be provided regarding the managerial and administrative controls to be used to assure safe operation, including a discussion of how applicable requirements within Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," are satisfied. In TVA's May 14, 2020 response to RAI Question 1b regarding how the output of one software tool (Quantum Geological Information System (QGIS)) is used to verify the output of another software tool (ArcGIS), TVA credited the use of different calculation methods as one of the diverse means used to prevent both software tools from having the same erroneous output. The NRC staff requests TVA provide the following information to demonstrate that the procurement and acceptance of the ArcGIS tool meet the requirements of Appendix B to 10 CFR Part 50.

1. TVA stated that the ArcGIS software uses gridded shapefile data to create a Triangular Irregular Network (TIN) surface that is used via a polygon volume tool to compute the sub-basin average Probable Maximum Precipitation (PMP) depths. In contrast, the QGIS alternate methodology utilizes the nearest neighbor geoprocessing tool to generate a raster surface that then uses a grid statistics tool to generate the nearest neighbor geoprocessing tool. It is unclear what the technical difference is between methodologies used to create a TIN surface and a raster surface and between the polygon volume tool and nearest neighbor geoprocessing tool used to create the sub-basin average PMP depths. Therefore, the NRC staff requests TVA to clarify how these two methodologies are technically different such that the use of these alternate calculation methodologies can be credited to prevent the same erroneous outputs in both GIS tools.

2. In Enclosure 3, "Gridded PMP Development Calculation" of the RAI response, Appendix A "GIS PMP Event Depth Computations," Section 6.5, states "Review of computed PMP depths across the ArcGIS and QGIS platforms identified a project PMP depth above Chatuge as an outlier. Analysis indicated areas around the sub-basin boundary with zero depth as the PMP points from the [Applied Weather Associates (AWA)] tool did not provide adequate coverage during TIN creation for the single sub-basin. PMP depths utilized for Chatuge are based on QGIS analysis to eliminate results without the complete PMP coverage." Since QGIS is used to verify the results of ArcGIS and their results are dissimilar for Chatuge, it is not clear what the basis is for using the output of QGIS instead of ArcGIS for this area. In addition, since the TVA determined that ArcGIS did not provide adequate coverage for Chatuge, it is not clear how the output of QGIS is determined to be correct for this area. Therefore, the NRC staff requests TVA to justify the use of the QGIS output for the Chatuge sub-basin.

Question 2

The regulations at 10 CFR Part 21, "Reporting of Defects and Noncompliance," define the term "dedication," in part as, "an acceptance process undertaken to provide reasonable assurance that a commercial grade item to be used as a basic component will perform its intended safety and, in this respect deemed equivalent to an item designed and manufactured under a 10 CFR Part 50, Appendix B quality assurance program. In all cases, the dedication process must be conducted in accordance with applicable provisions of 10 CFR Part 50, Appendix B." Criterion III, "Design Control" of Appendix B to 10 CFR Part 50, requires, in part, that:

Measures shall also be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the structures, systems and components. ... Design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and be approved by the organization that performed the original design unless the applicant designates another responsible organization.

Regulatory Guide (RG) 1.231, "Acceptance of Commercial-Grade Design and Analysis Computer Programs Used in the Safety-Related Applications for Nuclear Power Plants," Revision 0, endorses Revision 1 of the Electric Power Research Institute (EPRI) Technical Report 1025243, "Plant Engineering: Guideline for the Acceptance of Commercial-Grade Design and Analysis Computer Programs Used in Nuclear Safety-Related Applications" with respect to acceptance of commercial-grade design and analysis computer programs associated with basic components for nuclear power plants. In TVA's response to the NRC staff's RAI Question 1c regarding information supporting the dedication of the PMP Evaluation Tool, TVA submitted the "Software Dedication Report [SDR] PMP Evaluation Tool Package SDR-16-01," Revision 1. The NRC staff has reviewed this SDR and requests the following additional information to support the review of the commercial grade dedication of the PMP Evaluation Tool to meet the requirements of Criterion III of Appendix B to 10 CFR Part 50.

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