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

March 12, 2013

EA-13-023

Mr. Joseph W. Shea  
Vice President, Nuclear Licensing  
Tennessee Valley Authority  
1101 Market Street, LP 3D-C  
Chattanooga, TN 37402-2801

SUBJECT: SEQUOYAH NUCLEAR PLANT - NRC INSPECTION REPORT  
05000327/2013009, 05000328/2013009; PRELIMINARY YELLOW FINDING,  
AND APPARENT VIOLATIONS

Dear Mr. Shea:

On February 15, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Sequoyah Nuclear Plant Units 1 and 2. The enclosed inspection report documents the inspection results which were discussed on February 28, 2013, with you and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

The enclosed inspection report discusses one finding with two Apparent Violations (AVs) associated with the site flood mitigation strategy. Additional information regarding the basis for the NRC staff's significance determination is provided as an attachment to this letter. One AV was evaluated using the NRC Reactor Oversight Process (ROP) and one AV was evaluated using the NRC Traditional Enforcement Process.

The finding has preliminarily been determined to be a Yellow finding with substantial safety significance that may require additional NRC inspections. As described in the enclosed report, the finding involved the failure to establish and/or maintain an Abnormal Operating Procedure to mitigate onsite the effects of a probable maximum flood event. Specifically, AOP-N.03 was inadequate to mitigate the effects of a Probable Maximum Flood (PMF) event, in that, prior to September 30, 2009, earthen dams located upstream of the facility could potentially overtop, causing a subsequent breach. Failure of the earthen dams during a PMF event would

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have resulted in onsite flooding and subsequent submergence of critical equipment, such as the Emergency Diesel Generators, resulting in an ineffective flood mitigation strategy for these PMF events. This issue was assessed based on the best available information, using the applicable Significance Determination Process (SDP) in accordance with Inspection Manual Chapter (IMC) 0609, Appendix M. Following the initial review of this matter using preliminary quantitative analysis, Appendix M was used considering the uncertainties in the bounding analysis and the insights from the qualitative review. There is a lack of quantitative data and probabilistic risk assessment tools to accurately assess the risk significance of the performance deficiency in a timely manner. We also understand that this finding is not an immediate safety concern because compensatory measures have been in place since September 30, 2009, to address this degraded condition and preclude earthen dam overtopping. The finding is also an apparent violation of NRC requirements and is being considered for escalated enforcement action in accordance with the NRC Enforcement Policy which can be found on the NRC's Web site at <http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>.

In accordance with NRC IMC 0609, Significance Determination Process, we intend to complete our risk evaluations using the best available information and issue our final significance determination within 90 days of the date of this letter. The Significance Determination Process encourages an open dialogue between the NRC staff and the licensee; however, the dialogue should not impact the timeliness of the staff's final determination. Before the NRC makes its final decision on this matter, we are providing you an opportunity to either: (1) present to the NRC your perspectives on the facts and assumptions used by the NRC to arrive at these findings and their significance at a Regulatory Conference, or (2) submit your position on these findings to the NRC in writing. If you request a Regulatory Conference, it should be held within 30 days of the receipt of this letter and we encourage you to submit supporting documentation at least one week prior to the conference to make the conference more efficient and effective. If a Regulatory Conference is held, it will be open for public observation. The NRC will also issue a press release to announce the conference. If you decide to submit only a written response, such a submittal should be sent to the NRC within 30 days of the receipt of this letter. If you decline to request either a Regulatory Conference or submit a written response, you relinquish your right to appeal the final significance determination; in that, by not doing either you fail to meet the appeal requirements stated in the Prerequisites and Limitations sections of Attachment 2 of IMC 0609.

A second AV was associated with the preliminarily Yellow finding and is also being considered for escalated enforcement action in accordance with the NRC Traditional Enforcement Policy. Specifically, this issue involved the failure to report an unanalyzed condition, as required by 10 CFR 50.72. The licensee has had compensatory actions in place since September 30, 2009, for this condition and has since reported the unanalyzed condition to the NRC on February 6, 2013. This AV is being evaluated using the NRC's traditional enforcement process because it impacted NRC's ability to perform its regulatory function and is being considered for escalated enforcement action in accordance with the NRC Enforcement Policy. Additional details for this AV are provided in the enclosed inspection report.

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Before the NRC makes its enforcement decision, we are providing you an opportunity to respond to this AV addressed in this inspection report within 30 days of the date of this letter, or request a Pre-decisional Enforcement Conference (PEC). If a PEC is held, it will be open for public observation.

If you choose to provide a written response, it should be clearly marked as “Response to Apparent Violation in Inspection Report No. 05000327; 328/2013009”; EA-13-023, and should include for the apparent violation: the reason for the apparent violation, or, if contested, the basis for disputing the apparent violation; the corrective steps that have been taken and the results achieved; the corrective steps that will be taken to avoid further violations; and the date when full compliance will be achieved. Your response may reference or include previously docketed correspondence, if the correspondence adequately addresses the required response. If an adequate response is not received within the time specified or an extension of time has not been granted by the NRC, the NRC will proceed with its enforcement decision.

If you choose to request a PEC, the conference will afford you the opportunity to provide your perspective on the apparent violation and any other information you believe the NRC should take into consideration before making an enforcement decision. The topics discussed during the conference may include the following: information to determine whether the violation occurred, information to determine the significance of the violation, information related to the identification of the violation, and information related to any corrective actions taken or planned to be taken. In presenting your corrective actions, you should be aware that the promptness and comprehensiveness of your actions will be considered in assessing any civil penalty for the apparent violation.

Should you choose to request a Regulatory Conference/REC, a joint conference may be appropriate based on the commonality of these identified issues.

Please contact Scott Shaeffer at (404) 997-4521 within 10 days of the date of this letter to notify the NRC of your intended response. If we have not heard from you within 10 days, we will continue with our significance determination and enforcement decision. The final resolution of this matter will be conveyed in separate correspondence.

Since the NRC has not made a final determination as to the significance of these issues, no Notice of Violation is being issued at this time. Please be advised that the number and characterization of the apparent violations described in the enclosure may change as a result of further NRC review. You will be advised by separate correspondence of the results of our deliberations on this matter.

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In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from 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>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Sincerely,

*/RA/*

Richard P. Croteau, Director  
Division of Reactor Projects

Docket No.: 50-327, 50-328  
License No.: DPR-77, DPR-79

Enclosures:

1. NRC Inspection Report 05000327; 328/2013009  
w/Attachment: Supplemental Information
2. Phase 3: Failure to Ensure Onsite Electrical  
Power During a PMF Event (**OFFICIAL USE ONLY –  
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cc w/encl: (See page 5)

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Sincerely,

*/RA/*

Richard P. Croteau, Director  
Division of Reactor Projects

Docket No.: 50-327, 50-328  
License No.: DPR-77, DPR-79

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w/Attachment: Supplemental Information
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Power During a PMF Event (**OFFICIAL USE ONLY – SECURITY RELATED INFORMATION**)

cc w/encl: (See page 5)

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

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cc w/encl:  
J. T. Carlin  
Site Vice President  
Sequoyah Nuclear Plant  
Tennessee Valley Authority  
Electronic Mail Distribution

P. R. Simmons  
Plant Manager  
Sequoyah Nuclear Plant  
Tennessee Valley Authority  
Electronic Mail Distribution

M. McBrearty  
Manager, Site Licensing  
Sequoyah Nuclear Plant  
Electronic Mail Distribution

C. D. Mackaman  
Program Manager, Corporate Licensing  
Tennessee Valley Authority  
Electronic Mail Distribution

Edward J. Viglucci  
Associate General Counsel, Nuclear  
Tennessee Valley Authority  
Electronic Mail Distribution

County Mayor  
208 Courthouse  
625 Georgia Avenue  
Chattanooga, TN 37402-2801

Tennessee Department of Environment &  
Conservation  
Division of Radiological Health  
401 Church Street  
Nashville, TN 37243

Ann Harris  
341 Swing Loop  
Rockwood, TN 37854

J. Shea

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Letter to Joseph W. Shea from Richard P. Croteau dated March 12, 2013

SUBJECT: SEQUOYAH NUCLEAR PLANT - NRC INSPECTION REPORT  
05000327/2013009, 05000328/2013009; PRELIMINARY YELLOW FINDING,  
AND APPARENT VIOLATIONS

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**U. S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket Nos.: 50-327, 50-328

License Nos.: DPR-77, DPR-79

Report Nos.: 05000327/2013-009, 05000328/2013-009

Licensee: Tennessee Valley Authority (TVA)

Facility: Sequoyah Nuclear Plant, Units 1 and 2

Location: Sequoyah Access Road  
Soddy-Daisy, TN 37379

Dates: October 7, 2012 through February 15, 2013

Inspectors: G. Smith, Senior Resident Inspector  
W. Deschaine, Resident Inspector

Approved by: Scott M. Shaeffer, Chief  
Reactor Projects Branch 6  
Division of Reactor Projects

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Enclosure 1

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**SUMMARY OF FINDINGS**

IR 05000327/2013-009, 05000328/2013-009; 10/7/2012 – 02/15/2012; Sequoyah Nuclear Plant, Units 1 and 2; Adverse Weather Protection

This inspection was conducted by the resident inspectors. Two Apparent Violations were identified. The significance of most findings is indicated by their color (Green, White, Yellow, and Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP) dated June 2, 2011. Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. Cross-cutting aspects are determined using IMC 0310 "Components Within the Cross-Cutting Areas" dated October 28, 2011. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated June 7, 2012. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

TBD: The inspectors identified an Apparent Violation (AV) of Technical Specification (TS) 6.8.1, "Procedures and Programs," which, requires, in part, that written procedures shall be established, implemented, and maintained covering the activities recommended in Regulatory Guide 1.33, Revision 2, February 1978, Appendix A, Section 5, "Procedures for Abnormal Conditions." The licensee's failure to properly establish an adequate abnormal operating procedure (AOP) to mitigate the impact of a probable maximum flood (PMF) was a performance deficiency. Specifically, prior to September 30, 2009, AOP-N.03, "External Flooding," was inadequate to mitigate the effects of a PMF event, in that, earthen dams located upstream of the facility could potentially over-top, causing a subsequent breach. Failure of the earthen dams during a PMF event would have resulted in onsite flooding and subsequent submergence of critical equipment, such as the emergency diesel generators, resulting in an ineffective flood mitigation strategy for these PMF events. This performance deficiency was considered more than minor because it was associated with the Protection Against External Factors attribute of the Reactor Safety/ Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, prior to the installation of the compensatory measures, AOP-N.03, "External Flooding," was not adequate to prevent the loss of emergency power during a PMF event. The combination of the event frequencies and types of rainfall events which would over-top earthen dams leading to the loss of emergency power resulting in core damage has an impact of substantial safety significance. The NRC concluded that the significance of the finding is preliminarily of substantial safety significance (Yellow). The inspectors determined that no cross-cutting aspect was applicable. (Section 1R01)

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Enclosure 1

TBD: The inspectors identified an AV of 10 CFR 50.72(b)(3)(ii)(B), “Immediate Notification Requirements for Operating Nuclear Reactors,” for failure to report within eight hours an unanalyzed condition that significantly degraded plant safety. Specifically, the licensee failed to notify the NRC upon discovery that a postulated PMF would result in the overtopping of earthen dams not previously assumed in the plant design. The failure to report this unanalyzed condition resulted in the NRC not being made aware of a condition which would have resulted in additional NRC review. Specifically, the failure to notify the NRC within eight hours of discovery of an unanalyzed condition that significantly degraded plant safety and resulted in an unacceptable change to the facility or procedures. The inspectors determined an evaluation for cross-cutting aspect was not applicable because this is a traditional enforcement violation. (Section 1R01)

B. Licensee-Identified Violations

None

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REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (External Flood Protection Inspection)

a. Inspection Scope

The inspectors reviewed the licensee's readiness to cope with external flooding. External flooding from a probable maximum flood (PMF) or design basis flood (DBF) has the potential to cause internal flooding of a portion of a number of the plant structures. During this type of external flooding event, the reactor core decay heat will be removed by the flood protection provisions designed to remain operational up to the DBF elevation in accordance with position 2 of Regulatory Guide 1.59. Provisions have also been made to cool the spent fuel pool. Abnormal Operating Procedure (AOP)-N.03, "External Flooding," documents the shutdown requirements for the plant during this event. The inspectors reviewed the feasibility of several of these provisions for coping with this type of event to determine if they would achieve the desired results. The inspectors also reviewed the licensee's related corrective action documents (problem evaluation reports) to ensure any nonconforming conditions related to potential flooding were properly addressed. Documents reviewed are listed in the Attachment. This inspection satisfied one inspection sample.

b. Findings

.1 Inadequate Abnormal Operating Procedure for Flood Mitigation Strategy Prior to Installation of HESCO Barriers

Introduction: The inspectors identified an Apparent Violation (AV) of Technical Specification (TS) 6.8.1, "Procedures and Programs," for the licensee's failure to establish an adequate procedure for mitigation of external events, specifically flooding prior to the installation of HESCO barriers. HESCO barriers are engineered wire baskets lined with a fabric material and loaded with crushed gravel. Individual baskets are interconnected to form a boundary used to prevent over wash of earthen embankments.

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Enclosure 1

Description: In February 2008, NRC performed a quality assurance (QA) inspection of the flood-related combined license application (COLA) submittal information for Bellefonte Nuclear Plant (BLN) Units 3/4. In the course of the QA inspection, NRC reviewed a 1998 calculation performed for the TVA operating units to evaluate the effects of physical changes resulting from the National Dam Safety program to the reservoir system on the plant design basis flood calculations. NRC identified that the 1998 calculation did not meet the TVA procedural requirement in place at that time with respect to verification and validation of the software and documentation and verification of the input parameters required for those analyses. Consequently, TVA initiated Problem Evaluation Report (PER) 138749 during the course of that inspection. A Notice of Violation (NOV) was issued on March 19, 2008, against the BLN 3/4 COLA submittal for that plant's use of the 1998 calculation.

PER 138749 was written to document and evaluate impacts to operating plants throughout the process of bringing the software and design inputs under configuration in accordance with Nuclear Power Group's (NPG) QA Plan. Each operating site also initiated a PER to confirm continued functionality. TVA began validating and verifying the codes and inputs associated with PMF calculations.

The corrective actions for PER 138749 included a process for the identification and evaluation of "anomalies" in the course of the re-verification process. The evaluation of these anomalies included review and signoffs on an anomaly documentation form by personnel from TVA's River Operations and NPG. The anomalies were categorized as either enhancements or errors. Cumulative effects of all PERs were tracked in PER 138749, which also contained a table that described each anomaly, summarized the evaluation of the error, and tabulated the site and corporate PER numbers.

On July 28, 2009, the licensee determined that the spillway discharge coefficient previously used in the Fort Loudoun Dam rating curve was inconsistent with more recent model test data. Correcting this discharge coefficient resulted in less flow through the Fort Loudoun Dam spillways at the high headwater elevation during a PMF and would potentially over-top the earthen portion of the dam. Failure of the dam was assumed if the earthen portion over-topped. Based on these results, the licensee documented that the PMF levels were expected to exceed the original design licensing basis elevations of 738.1 feet, and 722.6 feet at Watts Bar and Sequoyah Nuclear Plants, respectively.

Inspectors, in that time frame, were informed that there were uncertainties in the PMF levels and, at that point, a bulldozer would be placed at Fort Loudoun Dam to cut a temporary channel in the marina saddle dam to prevent embankment erosion of the dam. This was communicated as a precautionary measure and indicated that would be in place from September 30, 2009, until December 31, 2009. PER 177501 documented this condition. The associated functional evaluation for this PER, Technical Basis for Functionality, Revision (Rev.) 1, Fort Loudoun Dam Spillway Coefficient, states the following as a conclusion:

This assessment covers only the time period between June and December. Based on the PMF level analysis performed with the SOCH, using appropriate inputs for seasonal rain-runoff, and taking credit for the compensatory action listed above, it is concluded that Cherokee, Fort Loudoun, Tellico, and Watts Bar dams will not overtop, and the original design basis PMF levels at BFN, SQN, and WBN of 572.5, 722.6, and 738.1 feet respectively will not be exceeded.

On December 30, 2009, calculation CDQ000020080054, Rev. 0, PMF Determination for Tennessee River Watershed, was issued. Shortly following release, inspectors were informed by the licensee that the calculation for the new PMF levels was complete and that the PMF level for the Sequoyah Nuclear Plant site had increased from the reanalyzed licensing basis number of 719.6 feet to 722.0 feet. No mention was made of the need to continue the previous compensatory measure for Fort Loudoun Dam or the need for additional or different compensatory measures for overtopping.

Subsequent review of this calculation by the inspectors did not indicate the need for any type of temporary measures to protect any of the four affected dams, Cherokee, Fort Loudoun, Tellico, or Watts Bar. According to the licensee, temporary HESCO barriers are credited in the above calculation. These barriers are interlocking 15'x3'x3' baskets filled with finely crushed gravel which, in effect, raises the height of the dam. However, inspectors did not find any reference to these temporary barriers in their review. According to the licensee's response to the NRC Confirmatory Action Letter dated October 30, 2012, failure of the HESCO barriers coincident with a PMF event would place the licensee outside their design PMF basis. Subsequent licensee analysis as part of the development of calculation CDQ000020080054, Rev. 0, PMF Determination for Tennessee River Watershed, also confirmed that the issue related to the non-conservative Fort Loudoun Dam spillway coefficients existed prior to the original plant licensing.

Analysis: The inspectors determined that the licensee failed to comply with 6.8.1, "Procedures and Programs," in that, AOP-N.03, "External Flooding," was not adequate to prevent the loss of critical safety functions (e.g., emergency power) during a PMF event prior to the installation of the HESCO barriers and other compensatory measures. This procedure, in part, is used to maintain the established licensing basis which requires conformance to regulatory position 2 of Regulatory Guide 1.59, "Design Basis Floods for Nuclear Power Plants" for protection against external flooding. Failure to establish adequate procedures for flood mitigation results in a failure to maintain adequate protection against external flooding in accordance with the licensing basis of the plant.

This performance deficiency was considered more than minor because it was associated with the Protection Against External Factors attribute of the Reactor Safety/Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, prior to the

installation of the compensatory measures, AOP-N.03, "External Flooding," was not adequate to prevent the loss of emergency power during a PMF event and prevent core damage.

A Senior Reactor Analyst performed a Phase III evaluation in accordance with IMC 609, "Significance Determination Process," Appendix M, and determined that treatment of this issue as a Yellow finding primarily based on the assumed event frequency without intervening mitigation. In addition, the analyst determined that there was a population of rainfall events (of less severity and greater frequency than the Probable Maximum Precipitation event) that could cause overtopping of upstream earthen dams, and hence would potentially add to the risk significance of the issue. The NRC concluded that potential over-topping of earthen dams leading to the loss of emergency power resulting in core damage is preliminarily of substantial safety significance (Yellow). The cause of the finding extends back through all procedure revisions prior to 2009. Therefore, it is not related to current performance and is not assigned a cross-cutting aspect. For the complete analysis, see Enclosure 2 of this inspection report.

Enforcement: TS 6.8.1, "Procedures and Programs," requires, in part, that written procedures shall be established, implemented, and maintained covering the following activities: The applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978; Appendix A, Section 5, requires procedures for Abnormal Conditions. These procedures in part are used to maintain the established license basis for compliance with regulatory position 2 of Regulatory Guide 1.59, "Design Basis Floods for Nuclear Power Plants."

Abnormal operating procedure AOP-N.03, "External Flooding," provides detailed instructions for implementing required site flood mitigation strategies necessary to cope with design basis flooding events.

Contrary to the above, prior to September 30, 2009, the licensee failed to establish an adequate abnormal condition procedure to implement a successful flood mitigation strategy. Specifically, AOP-N.03, "External Flooding," was inadequate to mitigate the effects of a Probable Maximum Flood (PMF) event, in that earthen dams located upstream of the facility could potentially overtop, causing a subsequent breach. Failure of the earthen dams during a PMF event would have resulted in onsite flooding and subsequent submergence of critical equipment, such as loss of emergency power. This violation existed from initial licensing until compensatory measures were put in place to prevent over-topping of the earthen portions of the Ft. Loudoun Dam. This issue was entered into their corrective action program as PER 682212. This violation is being treated as an AV, consistent with Section 2.3.3 of the NRC Enforcement Policy and is identified as AV 05000327, 328/2013009-01: Inadequate Abnormal Operating Procedure for Flood Mitigation Strategy Prior to Installation of HESCO Barriers.

.2 Failure to Report Unanalyzed Condition Related to External Flooding

Introduction: The inspectors identified an AV of 10 CFR 50.72(b)(3)(ii)(B), “Immediate Notification Requirements for Operating Nuclear Reactors,” for failure to report within eight hours an unanalyzed condition that significantly degraded plant safety.

Specifically, the licensee failed to notify the NRC upon confirmation that a postulated PMF event would result in overtopping of critical earthen dam structures upstream of the facility. Subsequent analysis identified this condition would have adversely impacted operability of all emergency diesel generators.

Description: As a result of a previous NRC-identified NOV related to postulated flooding levels, in support of Bellefonte Nuclear licensing, the New Generation Design and Construction (NGDC) organization initiated PER 138749. This PER was to document and evaluate impacts to operating plants throughout the process of bringing the software and design inputs under configuration in accordance with NPG’s QA Plan. Each operating site also initiated a PER to confirm continued functionality. TVA began validating and verifying the codes and inputs associated with PMF calculations.

In recent review of documents associated with this PER, the inspectors determined that the licensee had documented, on or about July 28, 2009, in PER 177492 from NGDC that due to potential incorrect flow coefficients on the Fort Loudoun Dam, reservoir levels would exceed the height of the dam. The consequences were documented that “...PMF levels are expected to exceed the original design and licensing basis elevations of 738.1, 722.6, and 572.5 at Watts Bar, Sequoyah, and Browns Ferry, respectively” (units are feet above sea level). Similar statements were documented about the Watts Bar, Tellico, and Cherokee dams. For additional details, see AV 0500327, 328/2013009-01 contained within this report.

As a result of PER 177492, four additional PERs were generated by TVA Nuclear Corporate (PER 177501), Watts Bar (PER 177669), Sequoyah (PER 177822), and Browns Ferry Nuclear Plant (PER 178130), respectively, for the Ft. Loudoun incorrect flow coefficient issue. The corporate PER was marked as ‘Not Reportable’. Each of the plant site PERs were marked as ‘Potentially Reportable’. The site licensing review by each one of the respective sites was never completed. Similarly, PERs were generated for corporate and the sites for each of the other three dams. All of these PERs relied on one functional evaluation for corporate PER 177501. This functional evaluation was completed on September 30, 2009. In essence, it said that the original licensing basis of all the plant sites would be maintained with a compensatory measure to change the TVA River Operations organization flooding notification to a rain event of 8.5 inches in 7 days and the removal of the Ft. Loudoun marina saddle dam with a bulldozer should the flooding conditions of concern be expected. This functional evaluation was issued on September 30, 2009, with an expiration date of December 31, 2009.

On September 30, 2009, Sequoyah issued event number 45395 making a non-emergency report due to TVA notifying various government agencies and the media that TVA intended to place some temporary structures on Ft. Loudoun, Cherokee, Tellico, and Watts Bar dams for the purpose of raising the height of the dams. This was characterized as a precautionary measure to prevent possible over-topping of the dams in the event of a hypothetical extreme flooding event. These precautionary measures were stated to ensure that the TVA sites (Sequoyah, Watts Bar, and Browns Ferry) remained within their original licensing basis. This report did not characterize the information as an unanalyzed condition and identified the proposed temporary structures as precautionary measures.

On December 30, 2009, calculation CDQ000020080054, Rev. 0, PMF Determination for Tennessee River Watershed, was issued. Shortly following release, the inspectors were informed by the licensee that the calculation for the new PMF levels was complete and that the PMF level for the Sequoyah plant had increased from the reanalyzed licensing basis number of 719.6 feet to 722.0 feet. No mention was made of the need to continue the previous precautionary measure for Fort Loudoun Dam or the need for additional or different measures for over-topping.

Analysis: During the current inspection period, the inspectors determined the failure to provide an eight-hour report of an unanalyzed condition that significantly degrades plant safety was contrary to 10 CFR 50 Part 50.72(b)(3)(ii)(B) and was a performance deficiency. The performance deficiency was evaluated using IMC 0612, "Power Reactor Inspection Reports," and was determined to be of more than minor significance. However, it was also determined to involve a traditional enforcement violation because it potentially impeded or impacted the regulatory process. Specifically, failure to notify the NRC of an unanalyzed condition challenges the regulatory process because it prevents the NRC from evaluating the need to expand the scope of inspection to include the circumstances surrounding the condition. The traditional enforcement violation was determined to be more than minor in accordance with the NRC Enforcement Policy because the information that was not reported to NRC had a material impact on safety and licensed activities.

Specifically, the failure to notify the NRC within eight hours of discovery of an unanalyzed condition that significantly degraded plant safety and resulted in an unacceptable change to the facility or procedures. The inspectors determined an evaluation for cross-cutting aspect was not applicable because this is a traditional enforcement violation.

Enforcement: 10 CFR 50.72(b)(3)(ii)(B), “Immediate Notification Requirements for Operating Nuclear Reactors,” requires, in part, that licensee’s report, within eight hours, an unanalyzed condition that significantly degraded plant safety.

Contrary to the above, on December 30, 2009, the licensee failed to report within eight hours an unanalyzed condition that significantly degraded plant safety for the Sequoyah facility. Specifically, the licensee failed to notify the NRC upon confirmation that a postulated Probable Maximum Flood (PMF) event would result in overtopping of critical earthen dam structures upstream of the Sequoyah facility. These overtopping conditions were not previously assumed in the licensing basis for the facility and represented an unanalyzed condition.

When identified by the NRC, the licensee entered this into the CAP as PER 681392 and 682202. The licensee has had compensatory actions in place since September 30, 2009, for this condition and has since reported the unanalyzed condition to the NRC on February 6, 2013. The NRC’s review of the impact of the unanalyzed condition prior to establishment of the compensatory actions was addressed in Section 1R01.1. This issue is identified as 05000327, 328/2013009-02, Failure to Report Unanalyzed Condition Related to External Flooding.

4OA6 Meetings

.1 Exit Meeting Summary

On February 28, 2013, the resident inspectors presented the inspection results to Mr. P. R. Simmons and other members of his staff, who acknowledged the findings. Also in attendance was Scott Shaeffer, Chief, Reactor Projects Branch 6. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT: SUPPLEMENTAL INFORMATION

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SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

J. Carlin, Site Vice President  
S. Connors, Operations Manager  
J. Cross, Chemistry Manager  
A. Day, Radiation Protection Manager  
C. Dieckmann, Manager, Maintenance  
J. Johnson, Program Manager Licensing  
A. Little, Site Security Manager  
T. Marshall, Director Safety and Licensing  
S. McCamy, Quality Assurance Manager  
M. Meade, Flooding Manager  
P. Noe, Site Engineering Director  
P. Pratt, Work Control Manager  
M. McBrearty, Licensing Manager  
P. Simmons, Plant Manager  
K. Smith, Director of Training

NRC personnel

S. Lingam, Project Manager, Office of Nuclear Reactor Regulation

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

|                          |    |                                                                                                                                |
|--------------------------|----|--------------------------------------------------------------------------------------------------------------------------------|
| 05000327, 328/2013009-01 | AV | Inadequate Abnormal Operating Procedure for Flood Mitigation Strategy Prior to Installation of HESCO Barriers (Section 1R01.1) |
| 05000327, 328/2013009-02 | AV | Failure to Report Unanalyzed Condition Related to External Flooding (Section 1R01.2)                                           |

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Attachment

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**LIST OF DOCUMENTS REVIEWED**

**Section 1R01: Adverse Weather Protection**

External Flood Protection Inspection

Licensing Documents

UFSAR Section 2.4.A.2.1

TRM 3.7.6, "Flood Protection"

Regulatory Guide 1.59, "Design Basis Floods for Nuclear Power Plants"

Design Criteria Document: SQN-DC-V-12.1, "Sequoyah Nuclear Plant – Flood Protection Provisions"

Calculations

CDQ000020080054, Rev. 0, 1, 2 and 3 PMF Determination for Tennessee River Watershed

CDQ000020080009, Rev. 2, Initial Dam Rating Curve Fort Loudoun

CDQ000020080080, Rev. 2, Flood Levels at WBN and SQN from Seismic Dam Failures

Procedures

AOP-N.03, External Flooding, Revision 42

Corrective Action Documents (PERs)

138749

138749, attachment TVA Hydrology Model Issue Identification and Assessment, dated 5/14/2010, pages 12 and 13

177492

177501 and associated functional evaluation Rev. 1

177669

177822

178649

179001

179338

179244

202572

202693

202777

202723

202622

499217

519131

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Attachment