Tennessee Valley Authority, Post Office Box 2000, Soddy Daisy, Tennessee 37384-2000

March 1, 2010

10 CFR 50.73

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Sequoyah Nuclear Plant, Units 1 and 2
Facility Operating License Nos. DPR-77 and DPR-79
NRC Docket Nos. 50-327 and 50-328

Subject: **Licensee Event Report 327 and 328/2009-009, "Unanalyzed Condition Affecting Probable Maximum Flood Level"**

The enclosed licensee event report provides details concerning an unanalyzed condition affecting the probable maximum flood level for the plant. This report is being submitted in accordance with 10 CFR 50.73(a)(2)(ii)(B), a condition that resulted in an unanalyzed condition that had the potential to significantly degrade plant safety.

TVA is currently completing the root cause evaluation. Once the evaluation is completed, TVA will supplement this report by April 16, 2010.

Respectfully,

Christopher R. Church
Site Vice President
Sequoyah Nuclear Plant

Enclosure:

cc: NRC Regional Administrator – Region II
NRC Senior Resident Inspector – Sequoyah Nuclear Plant

IE22
NRR

NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 08/31/2010

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

# LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

| 1. FACILITY NAME | 2. DOCKET NUMBER | 3. PAGE |
|---|---|---|
| Sequoyah Nuclear Plant (SQN) Unit 1 | 05000327 | 1 OF 5 |

**4. TITLE:**
Unanalyzed Condition Affecting Probable Maximum Flood (PMF) Level

| 5. EVENT DATE | | | 6. LER NUMBER | | | 7. REPORT DATE | | | 8. OTHER FACILITIES INVOLVED | |
|---|---|---|---|---|---|---|---|---|---|---|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REV NO. | MONTH | DAY | YEAR | FACILITY NAME | DOCKET NUMBER |
| 12 | 30 | 2009 | 2009 | - 009 - | 00 | 03 | 01 | 2010 | SQN Unit 2 | 05000328 |
| | | | | | | | | | FACILITY NAME | DOCKET NUMBER |

**9. OPERATING MODE**
1

**10. POWER LEVEL**
100

**11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §:** *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☐ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☒ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER Specify in Abstract below or in NRC Form 366A

**12. LICENSEE CONTACT FOR THIS LER**

| NAME | TELEPHONE NUMBER *(Include Area Code)* |
|---|---|
| Donald Sutton | 423-843-6539 |

**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

| CAUSE | SYSTEM | COMPONENT | MANU-FACTURER | REPORTABLE TO EPIX | CAUSE | SYSTEM | COMPONENT | MANU-FACTURER | REPORTABLE TO EPIX |
|---|---|---|---|---|---|---|---|---|---|
| D | | | | N | | | | | |

**14. SUPPLEMENTAL REPORT EXPECTED**

☒ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☐ NO

**15. EXPECTED SUBMISSION DATE**

| MONTH | DAY | YEAR |
|---|---|---|
| 04 | 16 | 10 |


ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On December 30, 2009, the issuance of an updated calculation titled "PMF Determination for Tennessee River Watershed" increased the SQN design basis PMF level from Elevation 719.6 feet to Elevation 722.0 feet. This increase in calculated PMF elevation resulted from several calculational changes including updated dam rating curves using model data and changes in reservoir operating policy. A previous change had decreased the SQN PMF elevation from 722.6 feet to 719.6 feet. However, SQN remains designed for a flood elevation of 722.6 feet with the current exception of the diesel generator sets and spent fuel pool cooling pumps. Because of the unanalyzed condition, the potential existed for SQN to exceed its PMF design basis and adversely affect plant safety. No actual flooding occurred. The root cause of this event is being evaluated and will be provided in a supplement to this LER. Compensatory measures have been established as required to protect plant equipment.

# LICENSEE EVENT REPORT (LER)

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| Sequoyah Nuclear Plant (SQN) Unit 1 | 05000327 | 2009 -- | 009 -- | 00 | 2 OF 5 |

17. NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)*

I. PLANT CONDITION(S)

Units 1 and 2 were operating at approximately 100 percent power at the time the probable maximum flood (PMF) calculation was issued.

II. DESCRIPTION OF EVENT

A. Event:

On December 30, 2009, the Tennessee Valley Authority (TVA) issued an updated calculation titled "PMF Determination for Tennessee River Watershed" that increased the SQN design basis PMF level from Elevation 719.6 feet to Elevation 722.0 feet. The increase in calculated PMF elevation resulted from several calculational changes including better flood modeling and changes in river and reservoir operating policies. A previous change had decreased the SQN PMF elevation from 722.6 feet to 719.6 feet. However, SQN remains designed for Elevation 722.6 feet with the current exception of the diesel generator sets (EIIS code EK) and spent fuel pool cooling pumps (EIIS code DA). No actual flooding occurred; however, because of the unanalyzed condition, the potential existed for SQN to exceed its design basis PMF level and adversely affect plant safety.

B. Inoperable Structures, Components, or Systems that Contributed to the Event:

None.

C. Dates and Approximate Times of Major Occurrences:

| Date | Description |
|---|---|
| March 19, 2008 | The Nuclear Regulatory Commission (NRC) issued an inspection report and notice of violation on implementation of the quality assurance program governing the hydrology code for TVA's Bellefonte Nuclear Plant combined license application. |
| February 3, 2009 | Based upon preliminary updated calculations indicating an increase in PMF elevation, SQN issued a standing order requiring contingency measures to protect the diesel generator sets and spent fuel pool cooling pumps during a PMF event. |
| December 30, 2009 | Updated PMF calculation increased the design basis PMF elevation from 719.6 feet to 722.0 feet. |

D. Other Systems or Secondary Functions Affected:

No other systems or secondary functions were affected by this event.

E. Method of Discovery:

The implementation of the quality assurance program governing TVA's PMF calculation for the Bellefonte Nuclear Plant combined license application was questioned by the NRC resulting in the issuance of an updated calculation titled "PMF Determination for Tennessee River Watershed" that increased the SQN design basis PMF level from Elevation 719.6 feet to Elevation 722.0 feet.

F. Operator Actions:

SQN Operations issued a standing order requiring contingency measures to protect the diesel generator sets and spent fuel pool cooling pumps during a PMF event.

G. Safety System Responses:

No safety system activation occurred. Contingency measures were put into place to protect the diesel generator sets and spent fuel pool cooling pumps.

III. CAUSE OF THE EVENT

A. Immediate Cause:

The immediate cause of this event was river system operational changes and incorrect assumptions regarding PMF calculations.

B. Root Cause:

The root cause of this event is being evaluated and will be provided in the supplement to this LER.

C. Contributing Factor:

Contributing factors to this event are being evaluated and will be provided in the supplement to this LER.

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17. NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)*

IV. ANALYSIS OF THE EVENT

On December 30, 2009, the issuance of an updated PMF calculation revealed that the PMF elevation had increased from Elevation 719.6 feet to Elevation 722.0 feet. Earlier preliminary calculations had indicated an increase in PMF elevation, and contingency measures to protect the diesel generator sets and spent fuel pool cooling pumps during a PMF event had already been put in place. These contingency measures required advance notification be given to SQN Operations of any rainfall conditions that would require implementation of contingency protection measures. Although no flooding occurred, because of the unanalyzed condition the potential existed for SQN to exceed its PMF design basis and adversely impact plant safety.

V. ASSESSMENT OF SAFETY CONSEQUENCES

Based on the above "Analysis of The Event," this event did not adversely affect the health and safety of plant personnel or the general public.

VI. CORRECTIVE ACTIONS

A. Immediate Corrective Actions:

SQN entered the information into the Corrective Action Program and issued a standing order requiring contingency measures to protect the diesel generator sets and spent fuel pool cooling pumps during a PMF event.

B. Corrective Actions to Prevent Recurrence:

The corrective actions are being managed by the TVA and Sequoyah Nuclear Plant Corrective Action Program.

The contingency measures established in the standing order will remain in effect until a design change has been implemented.

VII. ADDITIONAL INFORMATION

A. Failed Components:

None.

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**17. NARRATIVE** *(If more space is required, use additional copies of NRC Form 366A)*

B. Previous LERs on Similar Events:

A review of previous reportable events within the last three years did not identify any previous similar events.

C. Additional Information:

None.

D. Safety System Functional Failure:

This event did not result in a safety system functional failure in accordance with 10 CFR 50.73(a)(2)(v).

E. Unplanned Scram with Complications:

This condition did not result in an unplanned scram with complications.

VIII. COMMITMENTS

None.