Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

August 28, 2013

10 CFR 2.202
10 CFR 50.4

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

Watts Bar Nuclear Plant, Unit 1
Facility Operating License No. NPF-90
NRC Docket Nos. 50-390

Watts Bar Nuclear Plant, Unit 2
Construction Permit No. CPPR-92
NRC Docket No. 50-391

Subject: **First Six-Month Status Report in Response to the March 12, 2012, Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049) for Watts Bar Nuclear Plant**

References:

1. NRC Order Number EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012 (ML12054A735)

2. NRC Interim Staff Guidance JLD-ISG-2012-01, "Compliance with Order EA-12- 049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," Revision 0, dated August 29, 2012 (ML12229A174)

3. NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide" Revision 0, dated August 2012 (ML12242A378)

4. Letter from TVA to NRC, "Tennessee Valley Authority (TVA) - Initial Status Report in Response to the March 12, 2012, Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)," dated October 29, 2012 (ML12307A104)

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5. Letter from TVA to NRC, "Tennessee Valley Authority (TVA) - Overall Integrated Plan in Response to the March 12, 2012, Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049) for Watts Bar Nuclear Plant," dated February 28, 2013 (ML13067A030)

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued an order (Reference 1) to Tennessee Valley Authority (TVA). Reference 1 was immediately effective and directs TVA to develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities following a beyond-design-basis external event. Specific requirements are outlined in Attachment 2 of Reference 1.

Reference 1 required submission of an initial status report 60 days following issuance of the final interim staff guidance (Reference 2) and an overall integrated plan pursuant to Section IV, Condition C. Reference 2 endorses industry guidance document Nuclear Energy Institute (NEI) 12-06, Revision 0 (Reference 3) with clarifications and exceptions identified in Reference 2. Reference 4 provided the TVA initial status report regarding mitigation strategies. Reference 5 provided the TVA Watts Bar Nuclear Plant, Units 1 and 2 overall integrated plan.

Reference 1 requires submission of a status report at six-month intervals following submittal of the overall integrated plan. Reference 3 provides direction regarding the content of the status reports. The purpose of this letter is to provide the first six-month status report pursuant to Section IV, Condition C.2, of Reference 1, that delineates progress made in implementing the requirements of Reference 1. The enclosed report provides an update of milestone accomplishments since submittal of the overall integrated plan, including any changes to the compliance method or schedule.

The Enclosure describes the plans that TVA will use to meet the regulatory requirements outlined in Attachment 2 of Reference 1, but does not identify any additional actions to be taken by TVA. Therefore, this letter contains no regulatory commitments.

If you have any question regarding this submittal, please contact Kevin Casey at (423) 751-8523.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 28th day of August 2013.

Respectfully,

J. W. Shea
Vice President, Nuclear Licensing

Enclosure
cc: See Page 3

Enclosure:

Tennessee Valley Authority Watts Bar Nuclear Plant's First Six-Month Status Report for the Implementation of Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events

cc (Enclosure):

NRR Director - NRC Headquarters
NRO Director - NRC Headquarters
NRC Regional Administrator - Region II
NRC Project Manager - Watts Bar Nuclear Plant, Unit 1
NRC Project Manager - Watts Bar Nuclear Plant, Unit 2
NRC Senior Resident Inspector - Watts Bar Nuclear Plant

ENCLOSURE

TENNESSEE VALLEY AUTHORITY WATTS BAR NUCLEAR PLANT'S FIRST SIX-MONTH STATUS REPORT FOR THE IMPLEMENTATION OF ORDER EA-12-049, ORDER MODIFYING LICENSES WITH REGARD TO REQUIREMENTS FOR MITIGATION STRATEGIES FOR BEYOND-DESIGN-BASIS EXTERNAL EVENTS

ENCLOSURE

1 Introduction

Tennessee Valley Authority developed an Overall Integrated Plan (Reference 1 in Section 8) for Watts Bar Nuclear Units 1 and 2, documenting the diverse and flexible strategies (FLEX), in response to Reference 2. This attachment provides an update of milestone accomplishments since submittal of the Overall Integrated Plan, including any changes to the compliance method or schedule.

2 Milestone Accomplishments

The following milestone(s) have been completed since the development of the Overall Integrated Plan (Reference 1), and are current as of July 30, 2013.

- FLEX Strategy Evaluation - Complete
- Modifications Evaluations - Complete
- Unit 1 N-1 Walkdown - Complete
- Unit 2 Walkdown - Complete
- Procedures - PWROG issues NSSS-specific guidelines - Complete

3 Milestone Schedule Status

The following provides an update to Attachment 2 of the Overall Integrated Plan. It provides the activity status of each item, and whether the expected completion date has changed. The dates are planning dates subject to change as design and implementation details are developed.

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Submit 60 Day Status Report	Oct 2012	Complete	
Submit Overall Integrated Plan	Feb 2013	Complete	
Submit 6 Month Updates:			
Update 1	Aug 2013	Complete	
Update 2	Feb 2014	Not Started	
Update 3	Aug 2014	Not Started	
Update 4	Feb 2015	Not Started	
Update 5	Aug 2015	Not Started	
Update 6	Feb 2016	Not Started	
Update 7	Aug 2016	Not Started	
FLEX Strategy Evaluation	June 2013	Complete	
Walk-throughs or Demonstrations	Sep 2014[1]	Not Started	
Perform Staffing Analysis	June 2014	Not Started	
Modifications:			
Modifications Evaluation	Apr 2013	Complete	
Unit 1 N-1 Walkdown	Apr 2013	Complete	
Unit 1 Design Engineering	Oct 2013[1]	On Track	
Unit 1 Implementation Outage	Apr 2014	Not Started	Sept 2014
Unit 2 Construction Walkdown	Apr 2013	Complete	
Unit 2 Design Engineering	Oct 2013[1]	On Track	
Unit 2 Implementation (Startup)	Apr 2014	Not Started	Sept 2014
Storage:			
Storage Design Engineering		Complete	
Storage Implementation	Sept 2014[1]	Not Started	
On-Site FLEX Equipment			
Procure	Jun 2013	On Track	Dec 2013
Off-Site FLEX Equipment			
Develop Strategies with RRC	Dec 2013	On Track	
Install Off-site Delivery Station	Apr 2014	On Track	
Procedures:			
PWROG issues NSSS-specific guidelines	June 2013	Complete	
Create Site-Specific FSIs	June 2014	On Track	
Create Maintenance Procedures	June 2014	Not Started	
Training:			
Develop Training Plan	Jan 2014	On Track	
Training Complete	Sep 2014	Not Started	
Unit 1 FLEX Implementation	Sep 2014	Not Started	
Unit 2 FLEX Implementation	Sep 2014	Not Started	
Full Site FLEX Implementation	Sep 2014	Not Started	
Submit Completion Report	Aug 2014	Not Started	Oct 2014

Notes: 1. These milestones were not included in the February 28, 2013, Overall Integrated Plan

4 Changes to Compliance Method

The following is a list of changes made to the information provided in the February 28, 2013, Overall Integrated Plan (Reference 1). These changes meet the NEI 12-06 compliance method.

4.1 Revise Assumption 1 pg E-6, Note 14 pg E-9, Condensate Storage Tank (CST) references pg E-21 and E-23.

Install a new qualified Auxiliary Feedwater Supply Tank (AFWST) instead of using the Condensate Storage Tank (CST) for FLEX.

4.2 Revise reference to tank connections on pgs E-9, E-22 and E-23.

Change inlet and outlet FLEX connections from the CST to the new AFWST.

4.3 Revise the Refueling Water Storage Tank (RWST) alternate option for Reactor Coolant System (RCS) inventory on pg E-32.

Revised alternate RCS Inventory control flood option utilizing RWST as suction source for High Pressure pump. This source can be accessed utilizing the installed SI piping by routing a suction hose from the existing SIP A inlet drain valve to the High Pressure FLEX Pump inlet. The discharge of the High Pressure FLEX Pump will be routed using high pressure hose to the SIP A discharge piping.

4.4 Delete Core Exit Thermocouples (CETs) referenced on pgs E-16, 20, 27, 30, 33, 37, and Open Item OI-15, pg E-74.

CETs will not be required for flood.

4.5 Revised strategy for Attachment 1A, "Sequence of Events Timeline," pgs EA1-1 to EA1-9 for the following changes:

a. Revised and separated Timing and Deployment in both Flood and Non-flood Scenarios.

- Revised hose deployment based on detailed review.

b. Revise 3 MWe DG from available within 40 hours to available within 8 hours in the event timelines.

- Taking credit for 3 MWe DG being available at 8 hours in timelines
- Taking credit for 3 MWe DG as a backup for the 225 kva DG

c. Revise reference to Spent Fuel Pool (SFP) strategy as described below:

- Utilize 3 MWe DGs to return normal SFP Cooling Pumps to service at 8 hours.
- Primary and secondary strategies swapped
- Increase in time for hose deployment to SFP from 6.9 hours to 15 hours.
- Time for boil off of SFP level to reach 10 feet above the SFP racks increase from 37 to 85 hours (normal decay heat load).
- Time for boil off of SFP level to reach 10 feet above the SFP racks increase from 25 to 30 hours (maximum decay heat load).

Note - TVA will provide a revised Attachment 1A to reflect these changes on or before the next 6-Month Update due February 28, 2014.

5 Need for Relief and Basis for the Relief

Watts Bar expects to comply with the order implementation date and no relief is required at this time.

6 Open Items from Overall Integrated Plan and NRC Evaluation

The following table provides a summary of the open items documented in the Overall Integrated Plan or the NRC Evaluation and the status of each item.

Open Item Number	Description	Status
1	The current Condensate Storage Tank (CST) is a non-seismic tank that is not missile protected. The site is currently pursuing two options; the qualification and hardening of the existing CST or the construction of a new seismically qualified and missile protected CST. One of these options must be completed before the volume of the CST can be credited.	Closed A new qualified Auxiliary Feedwater Supply Tank (AFWST) instead of using the Condensate Storage Tank (CST) for FLEX.
2	Liquefaction of haul routes for FLEX will be analyzed.	Started
3	No detailed analysis has been provided regarding initial FLEX fuel supplies to determine a need time for access to 7 day tank supplies or resupply of the 7 day tanks. It is assumed that each FLEX component is stored with a minimum supply of 8 hours of fuel at constant operation. This assumption will need to be assessed once all FLEX equipment has been purchased and equipment specifications are known.	Closed Fuel consumption spreadsheet completed to show that fuel supply of equipment will last seven days.

Open Item Number	Description	Status
4	No need time has been identified for action to protect containment. This includes actions to mitigate pressurization of containment due to steaming when reactor coolant system (RCS) vent paths have been established or actions to mitigate temperature effects associated with equipment survivability. An evaluation will be provided to prove indefinite containment coping.	Open
5	The Phase 3 equipment staging area has not been determined.	Open
6	A strategy for clearing and removing debris will be determined.	Started
7	A thorough analysis of the makeup flow rate requirements and other equipment characteristics will be finalized during the detailed design phase of FLEX.	Started
8	The need time for spent fuel pool (SFP) cooling actions (deployment of hose, venting, and alignment of makeup) was determined using worst case heat loads. This item will continue to be assessed and later action times may be acceptable. Note that the timing for this step during an outage is different, but resources will be available to complete the required actions.	Started
9	Functional requirements for each of the Phase 3 strategies, equipment and components will be completed at a later time and will be provided in the six month updates to the February 28, 2013 submittal.	Started
10	Containment temperature instrumentation is only available until flood waters enter the technical support center (TSC) inverter or station battery rooms. A method to monitor containment temperature, post-flood, will be developed.	Started
11	The heating, ventilation and air conditioning (HVAC) analysis is preliminary, and has not been finalized.	Started
12	Verify ability to deploy FLEX equipment to provide core cooling in Modes 5 and 6 with steam generators (SGs) unavailable.	Open
13	An evaluation of the impact of FLEX response actions on design basis flood mode preparations will be performed. This evaluation will include the potential for extended preparation time for FLEX. Changes which affect the Integrated Plan will be included in the six month update.	Started

Open Item Number	Description	Status
14	Further analysis will be performed to determine the required timeline for implementing the 3 MWe diesel generators (DGs) as an alternate power source for the loads supplied by the 225 kva 480 Vac DGs.	Closed The 3 MWe DGs are available within 8 hours. A line will be added to 225kva timing to state that if 225s not available, then 3MWe to be started.
15	The CETs are only available until water enters the auxiliary instrument room. A method to monitor CET, post flood, will be evaluated and developed, if required.	Closed CETs will not be required for flood event.
16	Strategies to address extreme cold conditions on the refueling water storage tank (RWST) and/or boric acid tanks (BATs), including potential need to reenergize heaters have not been finalized.	Closed Irrelevant as the BATs will be exhausted by the time the extreme cold has an effect on the tanks.
17	Establish a contract with the Strategic Alliance for FLEX Emergency Response (SAFER) team in accordance with the requirements of Section 12 of NEI 12-06.	Started
18	Manual station blackout (SBO) load shedding time in References 4 and 5, Section 8.3.2.1.1, will be revised from 30 minutes to 45 minutes as supported by the 8 hour extended loss of alternating current power (ELAP) battery calculations.	Closed

7 Potential NRC Evaluation Impacts

There are no potential impacts or OIs to the NRC Evaluation identified at this time.

8 References

The following references support the updates to the Overall Integrated Plan described in this enclosure.

1. Letter from TVA to NRC, "Watts Bar's Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)," dated February 28, 2013.

2. NRC Order Number EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012.