



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

CNL-15-160

August 28, 2015

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10 CFR 50.4

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

Browns Ferry Nuclear Plant, Units 1, 2, and 3
Renewed Facility Operating License Nos. DPR-33, DPR-52, and DPR-68
NRC Docket Nos. 50-259, 50-260, and 50-296

Subject: **Fifth Six-Month Status Report in Response to the March 12, 2012
Commission Order Modifying Licenses with Regard to Reliable Spent
Fuel Pool Instrumentation (Order Number EA-12-051) for Browns Ferry
Nuclear Plant (TAC Nos. MF0881, MF0882, and MF0883)**

- References:
1. NRC Order Number EA-12-051, "Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," dated March 12, 2012 (ML12054A679)
 2. NRC Interim Staff Guidance JLD-ISG-2012-03, "Compliance with Order EA-12-051, Reliable Spent Fuel Pool Instrumentation," Revision 0, dated August 29, 2012 (ML12221A339)
 3. NEI 12-02, "Industry Guidance for Compliance with NRC Order EA-12-51, 'To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation,'" Revision 1, dated August 2012 (ML12240A307)
 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 Reliable Fuel Pool Instrumentation (Order Number EA-12-051)," dated October 29, 2012 (ML12307A105)
 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 Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051) for Browns Ferry Nuclear Plant," dated February 28, 2013 (ML13063A437)

6. Letter from NRC to TVA, "Browns Ferry Nuclear Plant, Units 1, 2, and 3 – Request for Additional Information Regarding Overall Integrated Plan in Response to the Commission Order Modifying Licenses with Regard to Requirements for Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051) (TAC Nos. MF0881, MF0882, and MF0883)," dated June 18, 2013 (ML13157A164)
7. Letter from TVA to NRC, "Response to NRC Request for Additional Information Regarding Overall Integrated Plan in Response to the Commission Order Modifying Licenses with Regard to Requirements for Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051) (TAC Nos. MF0881, MF0882, and MF0883)," dated July 18, 2013 (ML13206A005)
8. Letter from TVA to NRC, "First Six-Month Status Report in Response to the March 12, 2012, Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051) for Browns Ferry Nuclear Plant," dated August 28, 2013 (ML13247A290)
9. Letter from NRC to TVA, "Browns Ferry Nuclear Plant, Units 1, 2, and 3 - Interim Staff Evaluation and Request for Additional Information Regarding the Overall Integrated Plan for Implementation of Order EA-12-051, Reliable Spent Fuel Pool Instrumentation (TAC No. MF0881, MF0882, and MF0883)," dated November 14, 2013 (ML13274A657)
10. Letter from TVA to NRC, "Second Six-Month Status Report in Response to the March 12, 2012, Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051) for Browns Ferry Nuclear Plant (TAC Nos. MF0881, MF0882, and MF0883)," dated February 28, 2014 (ML14174A041)
11. Letter from TVA to NRC, "Third Six-Month Status Report in Response to the March 12, 2012, Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051) for Browns Ferry Nuclear Plant (TAC Nos. MF0881, MF0882, and MF0883)," dated August 28, 2014 (ML14247A430)
12. Letter from TVA to NRC, "Fourth Six-Month Status Report in Response to the March 12, 2012, Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051) for Browns Ferry Nuclear Plant (TAC Nos. MF0881, MF0882, and MF0883)," dated February 27, 2015 (ML15064A188)

13. Letter from NRC to TVA, "Browns Ferry Nuclear Plant, Units 1, 2, and 3 - Report for the Onsite Audit Regarding Implementation of Mitigating Strategies and Reliable Spent Fuel Instrumentation Related to Orders EA-12-049 and EA-12-051 (TAC Nos. MF0902, MF0903, MF0904, MF0881, MF0882, and MF0883)," dated April 6, 2015 (ML15069A358)
14. Letter from TVA to NRC, "Completion of Required Action by NRC Order EA-12-051, Reliable Spent Fuel Pool Instrumentation," dated June 9, 2015 (ML15160A512)

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued an order (Reference 1) to Tennessee Valley Authority (TVA). Reference 1 is applicable to TVA Browns Ferry Nuclear Plant (BFN), Units 1, 2, and 3, and was immediately effective and directed TVA to install reliable spent fuel pool level instrumentation (SFPLI). 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 (OIP) pursuant to Section IV, Condition C. Reference 2 endorsed industry guidance document Nuclear Energy Institute (NEI) 12-02, Revision 1 (Reference 3) with clarifications and exceptions identified in Reference 2. Reference 4 provided the TVA initial status report regarding SFPLI strategies. Reference 5 provided the BFN, Units 1, 2, and 3 OIP. On June 18, 2013, the NRC issued a request for additional information (RAI) (Reference 6) and TVA provided its response on July 18, 2013 (Reference 7).

Reference 1 also requires submission of a status report at six-month intervals following submittal of the OIP. Reference 3 provides direction regarding the content of the status reports. TVA submitted the first six-month update on August 28, 2013 (Reference 8). The NRC issued its Interim Staff Evaluation and RAIs regarding TVA's OIP on November 14, 2013 (Reference 9). TVA submitted the second six-month update on February 28, 2014 (Reference 10), the third six-month update on August 28, 2014 (Reference 11), and the fourth six-month status update on February 27, 2015 (Reference 12). The NRC issued its onsite Audit Report on April 6, 2015 (Reference 13).

In accordance with Section IV.C.3 of Reference 1, TVA notified NRC on June 9, 2015 (Reference 14), that full compliance with the requirements described in Reference 1 had been achieved for BFN, Unit 2.

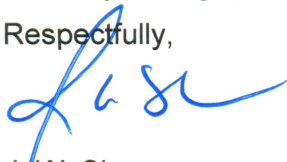
The purpose of this letter is to provide the fifth six-month status report pursuant to Section IV, Condition C.2, of Reference 1 which delineates progress made in implementing the requirements of Reference 1. The enclosed report provides an update of milestone accomplishments since submittal of the fourth six-month status report, including any changes to the compliance method or schedule.

There are no new regulatory commitments contained in this letter. If you have any question regarding this submittal, please contact Mike Oliver at (256) 729-7874.

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I declare under penalty of perjury that the foregoing is true and correct. Executed on the 28th day of August 2015.

Respectfully,



J.W. Shea
Vice President, Nuclear Licensing

Enclosure: Tennessee Valley Authority Browns Ferry Nuclear Plant's Fifth Six-Month Status Report in Response to the March 12, 2012, Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051)

cc (Enclosure):

NRR Director - NRC Headquarters
NRO Director - NRC Headquarters
NRC JLD Director - NRC Headquarters
NRC Regional Administrator - Region II
NRC Project Manager - Browns Ferry Nuclear Plant
NRC JLD Project Manager - Browns Ferry Nuclear Plant
NRC Senior Resident Inspector - Browns Ferry Nuclear Plant

ENCLOSURE

TENNESSEE VALLEY AUTHORITY BROWNS FERRY NUCLEAR PLANT'S FIFTH SIX-MONTH STATUS REPORT IN RESPONSE TO THE MARCH 12, 2012, COMMISSION ORDER MODIFYING LICENSES WITH REGARD TO RELIABLE SPENT FUEL POOL INSTRUMENTATION (ORDER NUMBER EA-12-051)

1 Introduction

In response to Order EA-12-051 (Reference 2 in Section 8), Browns Ferry Nuclear Plant (BFN) developed an Overall Integrated Plan (OIP) (Reference 1 in Section 8) documenting the requirements to install reliable spent fuel pool level instrumentation (SFPLI). This enclosure provides an update of milestone accomplishments since the submittal of the fourth six-month status report (Reference 9 in Section 8), regarding the OIP including any changes to the compliance method or schedule.

2 Milestone Accomplishments

The following milestones have been completed since submittal of the fourth six-month status update regarding the OIP, and milestone accomplishments are current as of August 16, 2015.

- Unit 2 Implementation
- Create Procedures
- Training Complete

3 Milestone Schedule Status

The following table provides an update to Attachment 2, Milestones, of OIP Revision 0. The update provides the activity status of each item and whether the target date has changed. The target completion dates are planning dates subject to change as design and implementation details are developed.

The revised milestone target completion dates do not impact the order implementation date.

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Submit 60 Day Status Report	10/29/2012	Complete	
Submit Overall Integrated Plan	02/28/2013	Complete	
Submit 6 Month Updates:			
Update 1	08/28/2013	Complete	
Update 2	02/28/2014	Complete	
Update 3	08/28/2014	Complete	
Update 4	02/27/2015	Complete	
Update 5	08/28/2015	Complete	
Update 6	02/28/2016	Not Started	
Update 7	08/28/2016	Not Started	
June 18, 2013 RAI Response	07/18/2013	Complete	
NRC ISE RAI Response	10/31/2014	Started	11/15/2015
Modifications:			
Unit 1 Design Engineering	11/03/2014	Complete	
Unit 1 Implementation	07/15/2015	Started	09/28/2015
Unit 2 Design Engineering	09/30/2014	Complete	
Unit 2 Implementation	03/25/2015	Complete	
Unit 3 Design Engineering	11/04/2014	Complete	
Unit 3 Implementation	07/10/2015	Started	09/28/2015
Procedures:			
Create Procedures	10/31/2014	Complete	
Training:			
Develop Training Plan	12/08/2014	Complete	
Training Complete	03/25/2015	Complete	
Full Site SFPLI Implementation	07/15/2016	Not Started	09/28/2015
Submit Completion Report	08/15/2015	Not Started	11/15/2015

4 Changes to Compliance Method

There are no other changes to the compliance method as documented in the OIP (Reference 1 in Section 8) and the first, second, third, and fourth six-month updates (References 5, 7, 8, and 9 in Section 8).

5 Need for Relief/Relaxation and Basis for the Relief/Relaxation

BFN expects to comply with the order implementation date and no relief/relaxation is required at this time.

6 Open Items from Overall Integrated Plan and NRC Evaluation

The following tables provide a summary of the open items documented in the OIP or the NRC Evaluation and the status of each item.

Overall Integrated Plan Open Item	Status
<p>OI-1) TVA will complete an instrument channel uncertainty calculation and document instrument channel accuracy and calibration requirements.</p>	<p>Closed – Calculation EDQ0000782014000251, “Demonstrated Accuracy Calculation for Spent Fuel Pool Wide Range Level Channels,” has been issued.</p>
<p>OI-2) TVA plans to utilize Guided Wave Radar technology. Confirm final technology selection after contracts are complete.</p>	<p>Closed - Guided Wave Radar technology was utilized (DCNs 71159, 71160, and 71161, Spent Fuel Pool Level Instrumentation Modifications for Units 1, 2, and 3, respectively).</p>
<p>OI-3) Confirm that the sensor cable and light weight at the bottom of sensor cable will not damage the SFP liner from impact during seismic event.</p>	<p>Closed – DCNs 71159, 71160, and 71161 (Spent Fuel Pool Level Instrumentation Modifications for Units 1, 2, and 3, respectively) discuss, in the Design Input or Change Impact sections, that due to the light weight of the sensing cable assembly, the pool wall will not be damaged by any interaction with the sensing cable or weight at the bottom of the sensing cable. Calculation CDQ0000782014000252, “Seismic Qualification and Anchorage Design of the BFN Spent Fuel Pool Level Element Support Bracket,” concludes that the level sensor cable and weight will not develop enough force during a seismic event to damage the SFP liner.</p>
<p>OI-4) After detailed engineering design is complete, confirm that SFP level channel components and cable routing will be contained within seismic structures such that the installation will comply with the reasonable protection guidance of NEI-12-06.</p>	<p>Closed – Review of DCNs 71159, 71160, and 71161 (Spent Fuel Pool Level Instrumentation Modifications for Units 1, 2, and 3, respectively) indicate that SFP level channel components and cable routing are contained within the Reactor Buildings and Control Bay which are seismic class I structures.</p>

7 Potential Draft Safety Evaluation Impacts

There are no potential impacts to the Draft Safety Evaluation identified at this time.

8 References

The following references support the updates to the OIP described in this enclosure.

1. 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 Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051) for Browns Ferry Nuclear Plant," dated February 28, 2013 (ML13063A437)
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