February 26, 2015

ULNRC-06185

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

10 CFR 2.202

Ladies and Gentlemen:

DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
UNION ELECTRIC CO.
FACILITY OPERATING LICENSE NPF-30
FOURTH SIX MONTH STATUS REPORT
IN RESPONSE TO MARCH 12, 2012 COMMISSION ORDER
MODIFYING LICENSES WITH REGARD TO RELIABLE SPENT
FUEL POOL INSTRUMENTATION (ORDER NUMBER EA-12-051)

References:
1. Letter dated March 12, 2012 from E. J. Leeds and M. R. Johnson, USNRC, to Adam C. Heflin, Callaway Plant, Union Electric Company, "Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation" (ADAMS Accession No. ML12056A044)
2. NRC Interim Staff Guidance JLD-ISG-2012-03, "Compliance with Order EA-12-051, Reliable Spent Fuel Pool Instrumentation," Revision 0, August 29, 2012 (ADAMS Accession No. ML12221A339)
3. ULNRC-05925, "Initial Status Report in Response to March 12, 2012 Commission Order Modifying Licenses With Regard to Reliable Spent Fuel Pool Instrumentation," dated October 29, 2012
4. ULNRC-05960, "Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses With Regard to Reliable Spent Fuel Pool Instrumentation," dated February 28, 2013
5. ULNRC-06026, "First Six-Month Status Report In Response to March 12, 2012 Commission Order Modifying Licenses With Regard To Reliable Spent Fuel Pool Instrumentation," dated August 29, 2013

6. ULNRC-06088, "Second Six-Month Status Report In Response to March 12, 2012 Commission Order Modifying Licenses With Regard To Reliable Spent Fuel Pool Instrumentation," dated February 26, 2014
7. ULNRC-06136, Third Six Month Status Report In Response To March 12, 2012 Commission Order Modifying Licenses With Regard To Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051), dated August 28, 2014

On March 12, 2012, the U. S. Nuclear Regulatory Commission (NRC) issued an order identified above as Reference 1 to Union Electric Company (dba Ameren Missouri) for Callaway Plant. Reference 1 was immediately effective and directs Ameren Missouri to have a reliable indication of water level in associated spent fuel storage pools. Specific requirements are outlined in Attachment 2 of Reference 1.

Reference 1 required submission of an initial status report 60 days following issuance of final interim staff guidance from the NRC (Reference 2) and an overall integrated plan pursuant to Section IV, Condition C. Reference 3 provided Ameren Missouri's initial status report regarding reliable spent fuel pool instrumentation. Reference 4 provided Ameren Missouri's Overall Integrated Plan.

Section IV, Condition C.2 of Reference 1 requires submission of a status report at six-month intervals following submittal of the overall integrated plan. NEI 12-02, "Industry Guidance for Compliance with NRC Order EA-12-051, Reliable Spent Fuel Pool Instrumentation," provides direction regarding the content of the status reports. References 5, 6 and 7 provided Ameren Missouri's first, second and third six-month status reports. The enclosure to this letter provides Ameren Missouri's fourth six-month status report pursuant to Section IV, Condition C.2 of Reference 1.

This letter does not contain new commitments.

If you have any questions concerning the content of this letter, please contact Scott Maglio, Regulatory Affairs Manager, at 573-676-8719.

I declare under penalty of perjury that the foregoing is true and correct.

Sincerely,

Executed on: 2/26/2015

Timothy E. Herrmann
VP, Engineering

Enclosure: Ameren Missouri's Fourth Six-Month Status Report for the Implementation of Order EA-12-051, Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation

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Enclosure
to ULNRC-06185

Ameren Missouri's Fourth Six Month Status Report for the Implementation of Order EA-12-051, Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation

1 Introduction

Ameren Missouri developed an Overall Integrated Plan (OIP) (Reference 1 in Section 8) for the Callaway Plant, documenting the requirements to install reliable Spent Fuel Pool Instrumentation System (SFPIS), in response to NRC Order EA-12-051 (Reference 2). This enclosure provides an update of milestone accomplishments since the last update submittal of the OIP (Reference 13), including any changes to the compliance method, schedule, or need for relief/relaxation and the basis, if any. Refer to Section 8 of this enclosure for a list of References.

2 Milestone Accomplishments

The following milestones have been completed since development of the SFPIS OIP (Reference 1), and are current as of January 31, 2015.

- Submittal of the fourth six-month status report for implementation of order EA-12-051 (this document).
- Receipt of SFP Instruments
- Create Procedures (Including Maintenance Procedures)
- Develop Training Plan
- Complete SFP Instrumentation Procedures & Training
- SFP Instruments Operational

3 Milestone Schedule Status

The following table provides an update of the milestone schedule provided in the SFPLIS OIP to the NRC. The table provides the activity status of each item, and the expected completion date noting any changes. The 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 outage. Italicized text denotes that a Milestone was updated since the third six-month status update.

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	Complete	
Update 3	Aug 2014	Complete	
Modifications:			
Modifications Evaluation	Feb 2013	Complete	
Commence Engineering and Design	Mar 2013	Complete	
Complete Design	Dec 2013	Complete	
Receipt of SFP Instruments	Apr 2014	*Complete*	
Procedures:			
Create Procedures (Note 1)	Sep 2014	*Complete*	
Training:			
Develop Training Plan	Aug 2014	*Complete*	
Complete SFP Instrumentation Procedures & Training	Sep 2014	*Complete*	
RAI Response:			
RAI Response (Note 2)	Jun 2013	Complete	
ISE RAI Response (Note 3)	Mar 2014	Complete	
SFP Instruments Operational (Note 4)	Nov 2014	*Complete*	
Submit Completion Report	Dec 2014	Not Started	Jul 2016

Note 1: Includes Maintenance Procedures

Note 2: The RAI referred to here is the NRC's RAI concerning the Overall Integrated Plan in response to Order EA-12-051 (Reference 3). Reference 4 provided Ameren Missouri's response to the RAI.

Note 3: The RAI's referred to here are from the NRC Interim Staff Evaluation (ISE) and Request for Additional Information concerning Overall Integrated Plan In Response To Order EA-12-051, Reliable Spent Fuel Pool Instrumentation (Reference 6)

Note 4: Prior to the completion of Refuel 20, the SPFIS was installed and in operation with a battery supply that can last 72 hours if site power is lost. Callaway requested relaxation (References 10 and 11) for the requirement described in NRC Order EA-12-051, Appendix 2, Section 1.6. The relaxation request was approved as documented in ML14154A400 (Reference 12). Upon implementation of Callaway's FLEX Strategies per NRC Order EA-12-049, full compliance with NRC Order EA-12-051 will be achieved.

4 Changes to Compliance Method

There are no changes to the compliance method documented in the Overall Integrated Plan (Reference 1) since the submittal of the Third Six Month Status Report (Reference 13) in August 2014.

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

Ameren Missouri requested via ULNRC-06036 (Reference 7) and received approval as documented in ML13319A668 (Reference 8) for relaxation of FLEX implementation per NRC Order EA-12-049 until the completion of Refuel 21 (Spring 2016). FLEX implementation is required to comply with the power supply requirement described in NRC Order EA-12-051, Attachment 2, Section 1.6. Based on the approval of the relaxation request, Ameren Missouri submitted ULNRC-06113 (Reference 10) and ULNRC-06119 (Reference11), to request relaxation of the power supply requirement described in NRC Order EA-12-051, Attachment 2, Section 1.6. This relaxation was approved by the NRC per ML14154A400 (Reference 12).

6 Open Items from Overall Integrated Plan and Interim Safety Evaluation

There are no open items from the Overall Integrated Plan. All requested information for the RAI's from the Interim Staff Evaluation was submitted on the STARS e-Portal by March 31, 2014, as required by Reference 6, as documented in the Third Month Status Report (Reference 13) in August 2014.

The following tables provide a summary of the open items documented in the Overall Integrated Plan or the Draft Safety Evaluation (SE) and the status of each item.

Overall Integrated Plan Open Item	Status
None	

Interim Staff Evaluation Open Items (Note 1)	Status
RAI No.1 Please provide the results of the calculation used to determine the water elevation that is sufficient for the pump's required NPSH so the NRC staff may confirm that Level 1 has been adequately identified.	Requested information was submitted on the STARS e-Portal by March 31, 2014, as required by Reference 6.

Interim Staff Evaluation Open Items (Note 1)	Status
RAI No.2 Please clarify whether this wireless communications system will be used as two separate point-to-point wireless communications systems (i.e., one system between the sending unit and receiver for the primary level channel and a second system between the sending unit and receiver for the back-up level channel), or whether there will be shared communications channels over which both the primary and the backup channels can communicate simultaneously. Also, please verify whether there are other wireless communication devices within the plant that will be allowed to share this wireless communications system.	Requested information was submitted on the STARS e-Portal by March 31, 2014, as required by Reference 6.
RAI No.3 Please provide a plant-specific evaluation of the interaction of the proposed wireless technology with other plant systems, in particular, interactions and any malfunctions that could result from potential failure modes of one channel, or due to BOB conditions.	Requested information was submitted on the STARS e-Portal by March 31, 2014, as required by Reference 6.
RAI No.4 Please provide additional information describing how the proposed arrangement and routing of the cables meet the Order requirement to arrange the SFP level instrument channels in a manner that provides reasonable protection of the level indication function against missiles that may result from damage to the structure over the SFP.	Requested information was submitted on the STARS e-Portal by March 31, 2014, as required by Reference 6.
RAI No.5 Please clarify if a stilling well is part of the instrument design and, if so, how its weight is accounted for and how it will be mounted and analyzed.	Requested information was submitted on the STARS e-Portal by March 31, 2014, as required by Reference 6.
RAI No.6 Please provide the results of the analyses used to verify the design criteria and methodology for seismic testing of the SFP instrumentation and the electronics units, including design basis maximum seismic loads and the hydrodynamic loads that could result from pool sloshing or other effects that could accompany such seismic forces.	Requested information was submitted on the STARS e-Portal by March 31, 2014, as required by Reference 6.

Interim Staff Evaluation Open Items (Note 1)	Status
RAI No.7 For each of the mounting attachments required to fasten SFP level equipment to plant structures, please describe the design inputs and the methodology that will be used to qualify the structural integrity of the affected structures/equipment.	Requested information was submitted on the STARS e-Portal by March 31, 2014, as required by Reference 6.
RAI No.8 Please describe the quality assurance process to be used to meet the augmented quality requirements identified in the Order.	Requested information was submitted on the STARS e-Portal by March 31, 2014, as required by Reference 6.
RAI No.9 Please provide an analysis of the maximum expected radiological conditions (dose rate and total integrated dose) to which the transmitter electronics will be exposed. Provide documentation indicating the cumulative (total integrated) radiological dose the electronics for this equipment are capable of withstanding. Discuss the time period over which the analyzed total integrated dose was applied.	Requested information was submitted on the STARS e-Portal by March 31, 2014, as required by Reference 6.
RAI No. 10 Please provide information indicating a) the temperature ratings for all system electronics (including sensor electronics, system electronics, transmitter, receiver and display) and whether the ratings are continuous duty ratings; and, b) the maximum expected temperature in the room(s) in which the sensor electronics will be located under BOB conditions, with no ac power available to run Heating, Ventilation, and Air Conditioning (HVAC) systems.	Requested information was submitted on the STARS e-Portal by March 31, 2014, as required by Reference 6.
RAI No. 11 Please provide information indicating the maximum expected relative humidity in the room in which the sensor electronics will be located under BOB conditions, with no ac power available to run HVAC systems, and whether the sensor electronics are capable of continuously performing required functions under this expected humidity condition.	Requested information was submitted on the STARS e-Portal by March 31, 2014, as required by Reference 6.

Interim Staff Evaluation Open Items (Note 1)	Status
RAI No. 12 Please provide the following: Information describing the evaluation of the sensor electronics design, the shock test method, test results, and forces applied to the sensor electronics applicable to successful tests demonstrating the testing provides an appropriate means to demonstrate reliability of the sensor electronics under the effects of severe shock. Information describing the evaluation of the sensor electronics design, the vibration test method, test results, forces and their frequency ranges, and directions applied to the sensor applicable to successful tests demonstrating the testing provides an appropriate means to demonstrate reliability of the sensor electronics under the effects of high vibration.	Requested information was submitted on the STARS e-Portal by March 31, 2014, as required by Reference 6.
RAI No. 13 Please provide analysis of the seismic testing results and show that the instrument performance reliability, following exposure to simulated seismic conditions representative of the environment anticipated for the SFP structures at Callaway, has been adequately demonstrated. Include information describing the design inputs and methodology used in any analyses of the mounting of electronic equipment onto plant structures, as requested in RAI No. 7 above.	Requested information was submitted on the STARS e-Portal by March 31, 2014, as required by Reference 6.
RAI No. 14 Please provide the NRC staff with the final configuration of the power supply source for each channel so the staff may conclude the two channels are independent from a power supply assignment perspective.	Requested information was submitted on the STARS e-Portal by March 31, 2014, as required by Reference 6.
RAI No.15 Please provide the results of the calculation depicting the battery backup duty cycle requirements demonstrating that battery capacity is sufficient to maintain the level indication function until offsite resource availability is reasonably assured.	Requested information was submitted on the STARS e-Portal by March 31, 2014, as required by Reference 6.

Interim Staff Evaluation Open Items (Note 1)	Status
RAI No.16 Please provide the following: An estimate of the expected instrument channel accuracy performance (e.g., in percent of span) under both a) normal SFP level conditions (approximately Level 1 or higher) and b) at the BOB conditions (i.e., radiation, temperature, humidity, post-seismic and post-shock conditions) that would be present if the SFP level were at the Level 2 and Level 3 datum points. A description of the methodology used for determining the maximum allowed deviation from the instrument channel design accuracy under normal operating conditions, which would be used as an acceptance criterion for a calibration procedure to alert operators and technicians that the channel requires adjustment to within normal design accuracy.	Requested information was submitted on the STARS e-Portal by March 31, 2014, as required by Reference 6.
RAI No.17 Please provide the following: A description of the capability and provisions the proposed level sensing equipment will have to enable periodic testing and calibration, including how this capability enables the equipment to be tested in-situ. A description of the way such testing and calibration will enable the conduct of regular channel checks of each independent channel against the other, and against any other permanently-installed SFP level instrumentation. A description of the functional checks to be performed, and the frequency at which they will be conducted. Describe how calibration tests will be performed, and the frequency at which they will be conducted. Discuss how these surveillances will be incorporated into the plant surveillance program. A description of the preventive maintenance tasks required to be performed during normal operation, and the planned maximum surveillance interval that is necessary to ensure that the channels are fully conditioned to accurately and reliably perform their functions when needed.	Requested information was submitted on the STARS e-Portal by March 31, 2014, as required by Reference 6.

Interim Staff Evaluation Open Items (Note 1)	Status
RAI No. 18 Please provide a list of the procedures addressing operation {both normal and abnormal response), calibration, test, maintenance, and inspection that will be developed for use of the SFP instrumentation. The licensee is requested to include a brief description of the specific technical objectives to be achieved within each procedure.	Requested information was submitted on the STARS e-Portal by March 31, 2014, as required by Reference 6.
RAI No.19 Please provide the following: Further information describing the maintenance and testing program the licensee will establish and implement to ensure that regular testing and calibration is performed and verified by inspection and audit to demonstrate conformance with design and system readiness requirements. Include a description of plans to ensure that necessary channel checks, functional tests, periodic calibration, and maintenance will be conducted for the level measurement system and its supporting equipment. A description of the compensatory actions to be taken in the event that one or both channels are non-functioning, as described in the guidance in NEI12-02 section 4.3. A description of the planned compensatory actions to be taken when one of the instrument channels cannot be restored to functional status within 90 days.	Requested information was submitted on the STARS e-Portal by March 31, 2014, as required by Reference 6.
RAI No. 20 Please provide a description of the in-situ calibration process at the SFP location that will result in the channel calibration being maintained at its design accuracy.	Requested information was submitted on the STARS e-Portal by March 31, 2014, as required by Reference 6.

Note 1: An Interim Staff Evaluation has been received from the NRC (Reference 6).

7 Potential Interim Safety Evaluation Impacts

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

8 References

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

1. ULNRC-05960,"Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051)," dated February 28, 2013.
2. NRC Order EA-12-051, "Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," dated March 12, 2012.
3. Letter dated June 7, 2013 from C. F. Lyon, USNRC to A. C. Heflin, Union Electric Company, "Callaway Plant, Unit 1 - Request for Additional Information RE: Overall Integrated Plan in Response to Order EA-12-051, 'Reliable Spent Fuel Pool Instrumentation' (TAC NO. MF0773)" (ADAMS Accession No. ML13121A187)
4. ULNRC-06008, "Response to Request for Additional Information With Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051)," dated July 3, 2013
5. ULNRC-06026 First Six Month Status Report In Response To March 12, 2012 Commission Order Modifying Licenses With Regard To Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051), dated August 29, 2013
6. ML13323A111, Callaway Plant, Unit 1 - Interim Staff Evaluation And Request For Additional Information Re: Overall Integrated Plan In Response To Order EA-12-051, Reliable Spent Fuel Pool Instrumentation (TAC NO. MF0773), dated November 25, 2013
7. ULNRC-06036, Request For Relaxation From NRC Order EA-12-049, "Order Modifying Licenses With Regard To Requirements For Mitigation Strategies For Beyond-Design-Basis External Events", dated October 09, 2013
8. ML13319A668, Callaway Plant, Unit 1- Relaxation Of The Schedular Requirements For Order EA-12-049 "Issuance Of Order To Modify Licenses With Regard To Requirements For Mitigation Strategies For Beyond Design Basis External Events", dated December 11, 2013
9. ULNRC-06088, Second Six Month Status Report In Response To March 12, 2012 Commission Order Modifying Licenses With Regard To Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051), dated February 26, 2014
10. ULNRC-06113, Request For Relaxation From NRC Order EA-12-051, "Order Modifying Licenses With Regard To Reliable Spent Fuel Pool Instrumentation", dated April 17, 2014
11. ULNRC-06119, Supplement to Request For Relaxation From NRC Order EA-12-051, "Order Modifying Licenses With Regard To Reliable Spent Fuel Pool Instrumentation", dated May 8, 2014
12. ML14154A400, Callaway Plant, Unit 1 - Relaxation Of The Schedule Requirements For Order EA-12-051, "Order Modifying Licenses With Regard To Reliable Spent Fuel Pool Instrumentation" dated June 26, 2014
13. ULNRC-06136, Third Six Month Status Report In Response To March 12, 2012 Commission Order Modifying Licenses With Regard To Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051), dated August 28, 2014