CALLAWAY PLANT UNIT 1
LICENSE RENEWAL APPLICATION

REQUEST FOR ADDITIONAL INFORMATION (RAI) SET #21 RESPONSES

RAI B2.1.5-4b

Background:

By its letter dated November 8, 2012, Union Electric Company (Ameren Missouri) responded to RAI B2.1.5-4a, which addressed the inspection method and frequency for the degradation indications in the reactor vessel bottom head.

In its response, Ameren Missouri stated that VT-3 examinations will be conducted to monitor the indications in the reactor vessel, consistent with American Society of Mechanical Engineers (ASME) Code Section XI, Table IWB-2500-1, Examination Category B-N-1. Ameren Missouri also stated that the acceptance standard for the VT-3 examination is ASME Code Section XI, IWB-3520.2, which allows a reduction of nominal section thickness of up to 5 percent due to corrosion or erosion. In addition, Ameren Missouri stated that if a future VT-3 examination finds that an indication has degraded, Ameren Missouri's corrective action program (AP) would determine any additional inspections required to characterize the indication, which may include an ultrasonic examination.

Issue:

The staff noted that the VT-3 examinations are not capable of monitoring the depths of the indications in the reactor vessel. Ameren Missouri's response to RAI B2.1.5-4a does not clearly address how its examinations will monitor the depths and depth-related conditions of the indications for the period of extended operation.

Request:

Clarify how Ameren Missouri will monitor the depths and depth-related conditions of the indications in the reactor vessel in order to determine whether the thickness of the reactor vessel wall is reduced. Such activities should also be clearly described in the summary description of the program in the Final Safety Analysis Report (FSAR) supplement.

Callaway Response

During the upcoming refueling outage (Spring, 2013), an ultrasonic examination of each indication in the reactor vessel wall is planned. Surface profile data will be collected in the area of the indication and the surrounding cladding. From the profile data, a measurement of the water path difference between the known good cladding and the bottom of the missing cladding area can be determined to obtain the depth of the indication, from which the reduction in wall thickness can be calculated.

Consistent with the ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD program, future thickness measurements of the reactor vessel wall indications in the reactor vessel lower head will be determined by:

a) obtaining surface profile data of the indications and surrounding cladding using an ultrasonic examination from the inside of the reactor vessel,

b) using an ultrasonic examination from the outside of the reactor vessel, or

c) using remote mechanical gages inside the reactor vessel.

LRA Appendix B2.1.1 and Appendix A1.1 have been revised, as shown on Amendment 21 in Enclosure 2, to describe the method for determining the reactor vessel's thickness at the location of the indications in the lower head of the reactor vessel.

Corresponding Amendment Changes

Refer to the Enclosure 2 Summary Table "Amendment 21, LRA Changes from RAI Responses" for a description of LRA changes with this response.

RAI B1.4-1b

Background:

In its response to RAI B1.4-1, as revised by letter dated December 19, 2012, Ameren Missouri stated that the sources of industry operating experience included within the scope of its operating experience review process are based on the document categories defined in the Institute of Nuclear Power Operations (INPO)'s, "Guidelines for Use of Operating Experience."

Issue:

(a) One of the INPO categories of industry operating experience is "Topical Reports." Per its abstract, NUREG-1801, "Generic Aging Lessons Learned (GALL) Report," should be treated as an approved topical report. However, the RAI response explicitly states that Ameren Missouri will not evaluate updates to the GALL Report unless the NRC issues an accompanying generic communication. Similar information is also captured in Ameren Missouri's proposed final safety analysis report supplement. Specifically, Commitment No. 2 in license renewal application (LRA) Table A4-1 states that "other guidance documents such as [GALL Report] revisions may not be explicitly considered unless communicated in the form of one of the NRC generic communications." It is not clear to the staff why Ameren Missouri's operating experience review processes capture some topical reports, but possibly omit others that are specifically related to aging management, such as a GALL Report revisions.

(b) The RAI response also states that Ameren Missouri requires industry operating experience applicable to Callaway to be documented in the Corrective Action Program (CAP) for further evaluation. To illustrate, Ameren Missouri explained that a guidance document or standard referenced in one of the primary sources of industry operating experience (i.e., sources covered by the INPO categories) would be considered as a relevant source applicable to Callaway. From this one example, it is not clear to the staff whether Ameren Missouri only identifies "industry operating experience applicable to Callaway" from INPO-communicated sources, or whether Ameren Missouri will rely on other activities to identify sources of industry operating experience that should be entered into the CAP for evaluation.

Request:

(a) Provide justification as to why an update to the GALL Report would not be captured and reviewed as a topical report under the operating experience program. Also, indicate whether the program will exclude the capture and review of other topical reports on age-related degradation and aging management.

(b) Describe activities used to identify industry-generated and NRC-generated guidance documents and standards applicable to Callaway. Justify the adequacy of these activities for identifying guidance documents and standards on age-related degradation and aging management.

(c) If any enhancements to the existing activities for the ongoing review of operating experience are necessary, provide the schedule for implementing these enhancements. Also provide a justification if implementation is later than the date when the renewed operating license is scheduled to be issued if approved.

(d) Revise the FSAR supplement accordingly based on the responses to the above items.

Callaway Response

a) Although issued as a NUREG, the abstract of NUREG-1801, “Generic Aging Lessons Learned (GALL) Report” states that the document should be treated as an approved topical report. This introduces an inconsistency, in that the Callaway Operating Experience program requires the review of topical reports but does not require the review of NUREGs for applicability.

Revision 2 of the GALL Report was communicated to the industry via a Regulatory Issue Summary (RIS 2011-05, "Information on Revision 2 to The Generic Aging Lessons Learned Report for License Renewal of Nuclear Power Plants"), a form of NRC generic communication. Per Callaway procedures, a RIS must be evaluated for applicability to Callaway. If future revisions to the GALL Report are communicated to the industry in this manner, then existing Callaway procedures ensure that the generic communications (as described in the response to RAIs B1.4-1 and B1.4-1a) will be reviewed for applicability.

In the event that a future revision to the GALL Report is not communicated to the industry using a form of generic communication, Callaway's Self Assessment and Benchmarking Programs provide adequate opportunity to identify that a revision to the GALL Report has been issued. Under these programs, Self Assessments, Formal Benchmarks, or Incidental Benchmarks are conducted. Formal Benchmarks include established schedules, assessment/benchmark plans and summary reports. Incidental Benchmarks include lessons learned from industry meetings, visits to other facilities, or surveys of other facilities. Issues or recommendations from Incidental Benchmarks are captured in accordance with the Corrective Action Program for further review. As described in the response to RAI B1.4-1a, the Engineering Support Personnel (ESP) are trained on aging-related degradation and aging management. Through Self Assessment and Benchmarking, there are sufficient opportunities to be made aware of new information on age-related degradation and aging management. This includes, but is not limited to, participation in industry working groups on License Renewal and benchmarking Aging Management Programs at other nuclear facilities. It is expected that the Aging Management Coordinator (a position described in the responses to RAIs B1.4-1 and B1.4-1a) or any engineer participating in a Self Assessment or Benchmarking activity would identify lessons learned, including those related to age-related degradation and aging management, and would determine whether this new information warrants review under the Operating Experience program.

This aligns with the NRC position expressed in LR-ISG-2011-05, NRC Staff Response to Comment No. 23:

> “Applicant personnel, through their knowledge of their AMPs and involvement in industry research programs, working groups, etc., should have sufficient opportunities to be made aware of new information on age-related degradation and aging management, and should be able to determine whether this new information warrants review under the operating experience program.”

Should the Staff opt against use of a generic communication, it is a reasonable expectation that a revision to the GALL Report would be publicized in some NRC communication as a NUREG revision, and would subsequently be identified by the Aging Management

Coordinator as an additional source of OE. Callaway's "Operating Experience" procedure specifically states that in addition to the sources of OE described in the RAI response, "Additional sources of Industry OE may be used… to identify Lessons Learned for enhancing the safe, legal, and efficient operation of Callaway", and that "Persons outside the [Performance Improvement Department] may initiate [Corrective Action Program entries] to review Industry OE."

As described in the responses to RAI B1.4-1 and B1.4-1a, the Callaway Operating Experience program requires the review of topical reports. The program does not discriminate by topic. Therefore, topical reports on age-related degradation and aging management are not excluded from review.

b) Often, new and revised industry-generated and NRC-generated guidance documents and standards applicable to Callaway are communicated through NRC generic communication or vendor communication that is procedurally evaluated under the Operating Experience program. For guidance and standards that are not transmitted in this manner, Callaway's Self Assessment and Benchmarking Programs facilitate their identification. Under these programs, Self Assessments, Formal Benchmarks, or Incidental Benchmarks are conducted. Formal Benchmarks include established schedules, assessment/benchmark plans and summary reports. Incidental Benchmarks include lessons learned from industry meetings, visits to other facilities, or surveys of other facilities. Issues or recommendations from Incidental Benchmarks are captured in accordance with the Corrective Action Program for further review. As described in the response to RAI B1.4-1a, the Engineering Support Personnel (ESP) are trained on aging-related degradation and aging management. Through Self Assessment and Benchmarking, there are sufficient opportunities to be made aware of new information on age-related degradation and aging management. This includes, but is not limited to, participation in industry working groups on License Renewal and benchmarking Aging Management Programs at other nuclear facilities. It is expected that the Aging Management Coordinator (a position described in the responses to RAIs B1.4-1 and B1.4-1a) or any engineer participating in a Self Assessment or Benchmarking activity would identify lessons learned, including the availability of applicable guidance and standards, and would determine whether this new information warrants review under the Operating Experience program.

c) No enhancements to the existing activities for the ongoing review of operating experience are necessary.

d) LRA Appendix B1.4 and LRA Table A4-1 Item 2 have been revised as shown in Enclosure 2 to eliminate the statement qualifying the review of guidance documents, and to indicate completed enhancements.

Corresponding Amendment Changes

Refer to the Enclosure 2 Summary Table "Amendment 21, LRA Changes from RAI Responses" for a description of LRA changes with this response.