

June 2, 2009

10 CFR 52.75

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
11555 Rockville Pike  
Rockville, MD. 20852

ALNRC 00029



Subject: AmerenUE, Callaway Plant Unit 2 (NRC Docket No. 52-037)  
Response to RAI No. 11 (eRAI 2603), Revision 0,  
Section 17.06-Maintenance Rule

- References:
1. Surinder Arora (NRC) to David E. Shafer (AmerenUE), "Final RAI No. 11 (eRAI No. 2603) – Public" email dated May 12, 2009.
  2. UN#09-166, UniStar Nuclear Energy, NRC Docket No. 52-016, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI No. 62, Question 17.06-1, Maintenance Rule, dated April 3, 2009.

The purpose of this letter is to respond to the Request for Additional Information (RAI) identified in the NRC email correspondence to AmerenUE, dated 5/12/09 (Reference 1). This RAI addresses the Maintenance Rule, as discussed in Section 17.6 of the Final Safety Analysis Report (FSAR), as submitted in Part 2 of the Callaway Plant Unit 2 Combined License Application (COLA).

The same RAI question was addressed to Calvert Cliffs Nuclear Power Plant Unit 3 which is the Reference COLA for the U.S. EPR Design Center. UniStar Nuclear Energy provided a response to this RAI question for Calvert Cliffs Nuclear Power Plant Unit 3 in Reference 2.

Callaway Plant Unit 2 accepts and endorses the same response provided in Reference 2 for Callaway Plant Unit 2. Enclosure 1 provides the proposed Callaway Plant Unit 2 COLA markups associated with the response to this RAI question. The Callaway Plant Unit 2 FSAR will be revised in a future COLA revision to formally incorporate the proposed changes identified in this RAI response.

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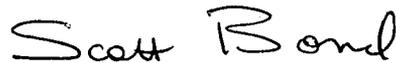
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This response does not include any proprietary information or new regulatory commitments.

If there are any questions regarding this transmittal, please contact me at (573) 676-8519, SBond2@ameren.com or Dave Shafer at (573) 676-4722, DShafer@ameren.com.

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

Executed on June 2, 2009

Handwritten signature of Scott M. Bond in black ink.

Scott M. Bond  
Manager  
Nuclear Generation Development

SMB/RCW/slk

Enclosure 1      Callaway Plant Unit 2 FSAR Changes in  
Response to RAI No. 11 (eRAI 2603)

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File code: A160.5761

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Enclosure 1

**Enclosure 1**  
Callaway Plant Unit 2 FSAR Changes in Response to RAI No. 11 (eRAI 2603)

Based on the above evaluation, no additional components related to the site are identified for the site-specific RAP scope. Accordingly, the SSCs identified for consideration within the RAP during the design certification process are the same SSCs within the plant-specific RAP scope. No new components are identified as a result of site-specific or plant-specific characterization.

Table 17.4-1 through Table 17.4-7 specify the SSCs for consideration within the scope of RAP.

### **17.4.3 ORGANIZATION, DESIGN CONTROL, PROCEDURES AND INSTRUCTIONS, CORRECTIVE ACTIONS, AND AUDIT PLANS**

No departures or supplements.

### **17.4.4 RELIABILITY ASSURANCE PROGRAM INFORMATION NEEDED IN A COL APPLICATION**

The U.S. EPR FSAR includes the following COL Item in Section 17.4.4:

A COL applicant that references the U.S. EPR design certification will provide the information requested in Regulatory Guide 1.206, Section C.I.17.4.4.

This COL Item is addressed as follows:

An introduction to the objectives of the Reliability Assurance Program including Design Reliability Assurance (D-RAP) is provided in the U.S. EPR FSAR Section 17.4. This section discusses post-certification D-RAP and the transition to reliability assurance activities during operations.

Reliability assurance activities are implemented in two stages. Stage 1 encompasses D-RAP conducted during certification of the U.S. EPR (described in the U.S. EPR FSAR Section 17.4) and the D-RAP for the site-specific design including procurement, construction, and fabrication and testing leading up to initial fuel load. D-RAP is largely accomplished for {AmerenUE} by the NSSS vendor and the Architect Engineer.

Stage 2 reliability assurance activities are conducted principally by {AmerenUE} and commence during the transition to fuel load and plant operation and are implemented concurrently with and as part of the Maintenance Rule (MR) program described in Section 17.6 Section 17.7 and the other programs described below. The MR program is implemented prior to authorization to load fuel per 10 CFR 52.103(g).

Stage 2 reliability assurance activities continue for the life of the plant and with the MR program are implemented using traditional programs for surveillance testing, inservice inspection, inservice testing, the general preventive maintenance program and the {AmerenUE} Quality Assurance Program Description.

Section 17.4.4.1 through Section 17.4.4.9 are added as a supplement to the U.S. EPR FSAR.

#### **17.4.4.1 Identification of Site-Specific SSCs for D-RAP**

Section 17.4.2 describes a methodology for ensuring site-specific SSCs are identified and included in the RAP.

The initial list of site-specific SSCs and their risk rankings are included in Section 17.4.2. The PRA model will continue to be refined over the life of the plant and this will require periodic adjustment to the risk rankings of SSCs in Section 17.4.2.

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#### 17.4.4.2 Procurement, Fabrication, Construction, and Test Specifications

Procurement, fabrication, construction, and test specifications for safety-related and non-safety-related SSCs within the scope of RAP are prepared and implemented under the approved QAPD referenced in Section 17.5. The approved QAPD describes the planned and systematic actions necessary to provide adequate confidence that SSCs will perform satisfactorily in service. These actions are applied to procurement, fabrication, construction, and test specifications.

Assumptions related to equipment reliability and availability are translated into verifiable attributes, defined characteristics and processes and are included in procurement, fabrication, and construction specifications such that deviations from these attributes, characteristics and processes may be identified and corrected.

Procedures describing equipment selection require consideration of the manufacturer's recommended maintenance activities and the manufacturer's time estimates for accomplishing these activities such that the equipment selected is able to meet availability assumptions while in service, including conservative allowances for unplanned maintenance.

Test specifications will describe to the extent practical the actual conditions that will exist when SSCs are called upon to perform their risk significant functions and testing will document proper performance under the specified conditions when these conditions can be practically established in the field. When these conditions cannot be duplicated, acceptance will be established based on qualification testing performed by the equipment vendor under controlled conditions.

The approved QAPD applies 10 CFR 50 Appendix B (CFR, 2008a) requirements to safety-related SSCs. For non-safety-related SSCs within the scope of RAP, Section V of the QAPD describes the process for selectively applying program controls to those characteristics or critical attributes that render the SSC a significant contributor to plant safety.

Section V of the QAPD specifies the quality requirements required for non-safety-related SSCs credited in mitigating defined events such as Anticipated Transients Without Scram (ATWS) and Station Blackout (SBO). When SSCs are risk significant due to their role in mitigating these defined events then the specified quality requirements for these SSCs will be satisfied.

#### 17.4.4.3 Quality Assurance Implementation

Implementation of the QAPD during procurement, fabrication, construction and preoperational testing of SSCs is accomplished in accordance with written instructions, procedures or drawings of a type appropriate to the circumstances, and where applicable, include quantitative or qualitative acceptance criteria. These procedures are {AmerenUE} implementing procedures or supplier implementing procedures governed by a supplier quality program approved by {AmerenUE}.

#### 17.4.4.4 Maintenance Rule/Operational Programs

The {AmerenUE} MR program is described in ~~Section 17.6~~ Section 17.7. Risk significant SSCs identified by reliability assurance activities are included in the MR program as high safety significance (HSS) components (~~Section 17.6~~) (Section 17.7). The opportunity to judge SSC performance under the MR program is provided by the operational programs discussed in ~~Section 17.6~~. Section 17.7.

Many SSCs would meet the criteria to be in the MR program without considerations related to the RAP. In cases where the RAP identifies a high or medium risk SSC that would not otherwise

have been in the MR program, the SSC is added. For those SSCs already in the Technical Specifications (TS), Inservice Inspection (ISI), or Inservice Testing (IST) programs, their performance under these programs is factored into the performance monitoring accomplished under the MR program.

In cases where a SSC requires periodic testing or inspection not already accommodated by an existing program, then special provisions will be made to accommodate the necessary testing or inspection, for example, in the Preventive Maintenance (PM) program.

#### **17.4.4.4.1 Performance Goal**

Reliability performance assumptions for SSCs are established under the MR at two levels of performance monitoring. The first level of performance monitoring (10 CFR 50.65(a)(2)) (CFR, 2008b) establishes conservative criteria used to judge that SSCs are meeting expected performance objectives. For SSCs, the performance monitoring criteria are established consistent with the reliability and availability assumptions used in the PRA. Failure to meet these objectives would trigger performance monitoring at the second level (10 CFR 50.65(a)(1)) accompanied by the establishment of specific defined goals to return the component to expected performance levels (Section 17.6) (Section 17.7). These specific defined goals also consider the reliability and availability assumptions used in the PRA.

#### **17.4.4.4.2 Feedback of Actual Equipment Performance and Operating Experience**

The feedback mechanism for periodically evaluating reliability assumptions based on actual equipment, train or system performance is realized in the implementation of the MR program. Since the performance monitoring criteria established under the MR program are set consistent with the assumed reliability assumptions used in the PRA, the failure to meet these performance objectives (i.e., equipment, train or system placed in 10 CFR 50.65(a)(1) category) requires an assessment of the assumed reliability as described in Section 17.4.4.4.1 above. This assessment requires that the assumed reliability be reviewed to ensure it is reflective of actual {AmerenUE} and industry performance. The process requires review by the PRA organization to concur that goals have been met before moving a component from a 10 CFR 50.65(a)(1) status back to a 10 CFR 50.65(a)(2) status.

#### **17.4.4.5 Non-Safety SSC Design/Operational Errors**

The process for providing corrective actions for design and operational errors that degrade non-safety-related SSCs within the scope of RAP is procedurally defined. All SSCs (safety-related or non-safety-related) with risk significance greater than "low" are entered into the MR program as HSS. The {AmerenUE} MR program does not distinguish between a Maintenance Rule Functional Failure (MRFF) and a Maintenance Preventable Functional Failure (MPFF). Therefore, non-safety-related SSCs that have experienced a MRFF attributable to a design or operating error (i.e., could not have been prevented by maintenance) are corrected using the corrective action process described in the QAPD. Under the MR program, MRFFs require cause determination (may be an apparent cause determination) and corrective action is implemented to prevent recurrence.

#### **17.4.4.6 Procedural Control**

Implementation of the reliability assurance activities is considered an activity affecting quality and the controls for procedures and instructions used to implement reliability assurance activities are specified in Section A through U and W (safety-related) and Section V (non-safety-related risk significant) of the QAPD. In most cases where a single procedure describes the process for an activity that applies to both safety-related and non-safety-related components (for example, establishing the performance monitoring criteria for the MR or establishing risk significance for SSCs in RAP), a single procedure or procedures that meet the

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Report No. UN-TR-06-001-A, 'Quality Assurance Program Description,' Revision 0," dated April 9, 2007.

UniStar, 2008. UniStar Quality Assurance Program Description Rev 1, dated January 21, 2008.}

**17.6 DESCRIPTION OF APPLICANT'S PROGRAM FOR IMPLEMENTATION OF 10 CFR 50.65, THE MAINTENANCE RULE**

This section of the U.S. EPR FSAR is incorporated by reference with the following supplements.

The U.S. EPR FSAR includes the following COL Item in ~~Section 17.0~~ Section 17.6.

A COL applicant that references the U.S. EPR design certification will describe the program for Maintenance Rule implementation.

This COL Item is addressed as follows:

The Maintenance Rule Program description included in NEI 07-02A, "Generic FSAR Template Guidance for Maintenance Rule Program Description for Plants Licensed Under 10 CFR Part 52," Revision 3 0, dated ~~September 2007~~ March 2008, (NEI, 2007 ~~2008~~) is incorporated by reference with supplements in Section 17.7.

~~The text of the template provided in NEI 07-02 is generically numbered as "17.X." When the template is incorporated by reference into this FSAR, section numbering is changed from "17.X" to "17.6."~~

~~Descriptions of the programs listed in Subsection 17.6.3 of NEI 07-02 are provided in the following FSAR Chapters/Sections:~~

- ~~◆ Maintenance rule program (Section 17.6).~~
- ~~◆ Quality assurance program (Section 17.5).~~
- ~~◆ Inservice inspection program (Section 5.2 and Section 6.6).~~
- ~~◆ Inservice testing program (Section 3.9).~~
- ~~◆ Technical specifications surveillance test program (Chapter 16).~~
- ~~◆ Preventive Maintenance Program (Section 17.6).~~

**17.6.1 SCOPING PER 10 CFR 50.65(b)**

The U.S. EPR FSAR includes the following COL Item in Section 17.6.1:

A COL applicant that references the U.S. EPR design certification will describe the process for determining which plant structures, systems, and components (SSC) will be included in the scope of the Maintenance Rule Program in accordance with 10 CFR 50.65(b).

This COL Item is addressed as follows:

~~The Maintenance Rule Program~~ Maintenance rule scoping per 10 CFR 50.65(b) is described in Section 17.6. 17.7.1.1

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**17.6.2 MONITORING PER 10 CFR 50.65(a)**

The U.S. EPR FSAR includes the following COL Item in Section 17.6.2:

A COL applicant referencing the U.S. EPR design certification will provide a program description for monitoring SSC in accordance with 10 CFR 50.65(a)(1).

This COL Item is addressed as follows:

~~The Maintenance Rule Program Monitoring and corrective action per 10 CFR 50.65(a)(1) is described in Section 17.6. 17.7.1.2.~~

The U.S. EPR FSAR includes the following COL Item in Section 17.6.2:

A COL applicant that references the U.S. EPR design certification will provide the process for determining which SSC within the scope of the Maintenance Rule Program will be tracked to demonstrate effective control of their performance or condition in accordance with paragraph 50.65(a)(2).

This COL Item is addressed as follows:

~~The Maintenance Rule Program Preventative maintenance per 10 CFR 50.65(a)(2) is described in Section 17.6 17.7.1.3.~~

**17.6.3 PERIODIC EVALUATION PER 10 CFR 50.65(a)(3)**

The U.S. EPR FSAR includes the following COL Item in Section 17.6.3:

A COL applicant that references the U.S. EPR design certification will identify and describe the program for periodic evaluation of the Maintenance Rule Program in accordance with 10 CFR 50.65(a)(3).

This COL Item is addressed as follows:

~~The Maintenance Rule Program Periodic evaluation of monitoring and preventative maintenance per 10 CFR 50.65(a)(3) is described in Section 17.6. 17.7.1.4.~~

**17.6.4 RISK ASSESSMENT AND MANAGEMENT PER 10 CFR 50.65(a)(4)**

The U.S. EPR FSAR includes the following COL Item in Section 17.6.4:

A COL applicant that references the U.S. EPR design certification will describe the program for maintenance risk assessment and management in accordance with 10 CFR 50.65(a)(4).

This COL Item is addressed as follows:

~~The Maintenance Rule Program Risk assessment and risk management per 10 CFR 50.65(a)(4) is described in Section 17.6 17.7.1.5.~~

**17.6.5 MAINTENANCE RULE TRAINING AND QUALIFICATION**

The U.S. EPR FSAR includes the following COL Item in Section 17.6.5:

A COL applicant that references the U.S. EPR design certification will describe the program for selection, training, and qualification of personnel with Maintenance-Rule-related responsibilities consistent with the provisions of Section 13.2 as applicable.

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This COL Item is addressed as follows:

~~The Maintenance Rule Program~~ Maintenance rule training and qualification is described in ~~Section 17.6.~~ 17.7.2.

#### 17.6.6 MAINTENANCE RULE PROGRAM ROLE IN IMPLEMENTATION OF RELIABILITY ASSURANCE PROGRAM (RAP) IN THE OPERATIONS PHASE

The U.S. EPR FSAR includes the following COL Item in Section 17.6.6:

A COL applicant referencing the U.S. EPR design certification will describe the relationship and interface between Maintenance Rule Program and the Reliability Assurance Program (refer to Section 17.4).

This COL Item is addressed as follows:

~~The Maintenance Rule Program~~ Maintenance rule program relationship with reliability assurance activities is described in ~~Section 17.6.~~ 17.7.3.

#### 17.6.7 MAINTENANCE RULE PROGRAM IMPLEMENTATION

The U.S. EPR FSAR includes the following COL Item in Section 17.6.7:

A COL applicant referencing the U.S. EPR design certification will describe the plan or process for implementing the Maintenance Rule Program as described in the COL application, which includes establishing program elements through sequence and milestones and monitoring or tracking the performance and/or condition of SSC as they become operational.

This COL Item is addressed as follows:

~~The Maintenance Rule Program~~ Maintenance rule program implementation is described in ~~Section 17.6.~~ 17.7.5.

#### 17.6.8 REFERENCES

{This section is added as a supplement to the U.S. EPR FSAR.

**NEI, 20072008.** Generic FSAR Template Guidance for Maintenance Rule Program Description for Plants Licensed Under 10 CFR Part 52, NEI 07-02A, Revision 3 0, Nuclear Energy Institute, September 2007 March 2008.}

#### 17.7 MAINTENANCE RULE PROGRAM

This section is added as a supplement to the U.S. EPR FSAR.

The Maintenance Rule Program description included in NEI 07-02A, "Generic FSAR Template Guidance for Maintenance Rule Program Description for Plants Licensed Under 10 CFR Part 52," Revision 0, dated March 2008 is incorporated by reference. The text of the template provided in NEI 07-02A is generically numbered as "17.X." The template is incorporated by reference into this FSAR Section by changing the numbering from "17.X" to "17.7."

In section 17.X.1.1.b of NEI 07-02A the "DRAP" (Reliability Assurance Program for the Design Phase) is defined to be located in FSAR "17.Y." The DRAP is included in Section 17.4. The

template is incorporated by reference into this FSAR section by changing the numbering from "17.Y" to "17.4."

Descriptions of the programs listed in Subsection 17.X.3 of NEI 07-02A are provided in the following FSAR Chapters/Sections or Part 4:

- ◆ Maintenance rule program (Section 17.7).
- ◆ Quality assurance program (Section 17.5).
- ◆ Inservice inspection program (Sections 5.2 and 6.6).
- ◆ Inservice testing program (Section 3.9).
- ◆ Technical specifications surveillance test program (Part 4).
- ◆ Maintenance Programs (Section 13.5.2.2.6).