

OPENING CONSIDERATIONS

AmerenUE is always available to discuss the location where a given issue is discussed in any amendment application. However, several of the questions below tend to go beyond the previously documented NRC approvals and go into details discussed in the WCAPs or the several rounds of RAIs on those topical reports (e.g., see questions 2.c through 2.f, 3.d, and 3.i). Extensive NRC and industry resources have already been allocated to those reviews. It was hoped that the review of this LAR would be based on the NRC Safety Evaluation (SE) Conditions for the respective WCAPs and the extent to which the amendment application followed the approved travelers (TSTF-411 Rev. 1 approved by NRC letter, Beckner to NEI, dated 8/30/02 and discussed in Section 3.5 of the WCAP-15376 SE dated 12/20/02; TSTF-418 Rev. 2 approved by NRC letter and safety evaluation, Beckner to NEI, dated 4/2/03), all of which are addressed in the amendment application.

COMMENTS/QUESTIONS:

The comments and questions below are for the Callaway application dated December 17, 2003 (ULNRC-04929), on the subject of implementation of WCAP-14333 and WCAP-15376.

1. It appears that the proposed changes can be broken down into the following groups: (1) changes based on WCAP-14333, (2) changes based on WCAP-15376, (3) changes based on Amendment No. 137, (4) administrative changes such as the movement of the word "AND" in the required actions for Condition O in TS 3.3.2, and (5) other changes. The proposed changes in the application dated 12/17/2003 have been grouped as follows:

TS	Part of TS	Description of Change	Group	Licensee's Justification
3.3.1	Condition D	Rewrite required actions.	5	Where in application.
	Condition D	Extend CTs and <u>bypass time.</u>	1	Where in application.
	Condition E	Extend CTs and bypass time.	1	Where in application.
	Condition M	Extend CTs and bypass time.	1	Where in application.
	Condition O	Extend CTs and bypass time.	2	Where in application.
	Condition P	Extend CTs.	1	Where in application.

TS	Part of TS	Description of Change	Group	Licensee's Justification
	Condition Q	Extend CTs	1	Where in application.
	Condition R	Extend CTs and bypass time.	2	Where in application.
	Condition R	Delete required action notes.	2	Where in application.
	Condition R	Change Notes to Note, and delete number 1.	5	Administrative change. Where in application.
	Condition W	Extend CTs.	1	Where in application.
	Condition X	Extend CTs	1	Where in application.
	SR 3.3.1.4	Extend TADOT frequency.	2	Where in application.
	SR 3.3.1.5	Extend actuation logic test frequency.	2	Where in application.
	SR 3.3.1.7	Extend COT frequency.	2	Where in application.
	SR 3.3.1.8	Extend COT frequency.	2	Where in application.
3.3.2	Condition C	Extend CTs.	1	Where in application.
	Condition D	Extend CTs and bypass time.	1	Where in application.
	Condition E	Extend CTs and bypass time.	1	Where in application.
	Condition G	Extend CTs.	1	Where in application.
	Condition I	Extend CTs and bypass time.	1	Where in application.
	Condition K	Extend CTs and bypass time.	1	Where in application.
	Condition K	Rewrite required actions.	5	Where in application.
3.3.2	Condition M	Extend CTs.	1	Where in application.
	Condition M	Extend CTs.	1	Where in application.

TS	Part of TS	Description of Change	Group	Licensee's Justification
	Condition O	Left justify the word "AND."	4	Administrative change. Justification at end of Section 2.0.
	Condition S	Add the condition and required actions.	5	Note a. Where in application.
	SR 3.3.2.2	Extend actuation logic test frequency.	2	Where in application.
	SR 3.3.2.3	Revise note.	5	Where in application.
	SR 3.3.2.4	Extend master relay test frequency.	2	Where in application.
	SR 3.3.2.5	Extend COT frequency.	2	Where in application.
	SR 3.3.2.6	Add slave relay number to note.	3	Note b. Justification in Section 2.0, item i.
	Table 3.3.2-1	Revise condition for Functions 4.c and 5.b.	5	Note a. Where in application.
	Table 3.3.2-1	Change SR for Functions 4.c and 5.b.	5	Note c. Where in application.
3.3.9	SR 3.3.9.3	Extend COT frequency.	2	Where in application.

Note a: The automatic actuation logic and actuation relays (MSFIS) for steam line isolation (Function 4.c) and turbine trip and feedwater isolation (Function 5.b) of Table 3.3.2-1 are not part of the amendment to extend the CTs of Condition G. Condition S is the existing Condition G with the existing CTs.

Note b: Add slave relay number to note because SR 3.3.2.14 is the requirement to perform the slave relay test of that relay, not SR 3.3.2.6 per Amendment No. 137.

Note c: Functions 4.c and 5.b are not included in the proposed changes based on WCAP-14333 or WCAP-15376.

Response: This table matches Attachment 1 Section 2.0 and the TS markups in Attachments 2 and 3, except that the second change in the table to TS 3.3.1 Condition D should also note that the bypass time is extended. Specific Callaway TS changes are discussed in Section 2.0 of Attachment 1, pages 2-7. The requested information for RAI #1 appears to be a roadmap as to where each of the 5 change groups is discussed in the amendment application. That roadmap is as follows:

Change group 1 – The WCAP-14333 changes are discussed generically, as a set, in Section 3.0 of Attachment 1, pages 7-8 (see especially the table on page 8). Justification of these changes is discussed in Section 4.0 of Attachment 1, pages 10-12 and in Section 5.1 of Attachment 1, page 24. See especially the combined risk metrics table on page 12 for changing the current TS to incorporate both WCAPs.

Change group 2 – The WCAP-15376 changes are discussed generically, as a set, in Section 3.0 of Attachment 1, pages 8 (bottom paragraph) and 9 (see especially the table on page 8). Justification of these changes is discussed in Section 4.0 of Attachment 1, pages 10-12 and in Section 5.1 of Attachment 1, page 24. See especially the combined risk metrics table on page 12 for changing the current TS to incorporate both WCAPs.

Change group 3 – See Attachment 1, page 3 (item i) and page 6 (item 24). This is a change to the SR 3.3.2.6 Note previously justified by the amendment application leading to LA 137.

Change group 4 – See Attachment 1, top of page 7. This is an editorial change only, for consistency with proper STS formatting rules (TS 3.3.2 Condition O formatting).

Change group 5 – The power range neutron flux change (TS 3.3.1 Condition D) is discussed in Attachment 1, page 2 (items a and b), page 3 (item 1), page 21 (last paragraph), and page 22 (top of page). See especially pages 21 and 22.

The reactor trip breaker change (TS 3.3.1 Condition R) is discussed in Attachment 1, page 3 (items d and e), page 4 (item 7), and page 22 (3rd full paragraph). See especially page 22. Option 3 of Insert 6 in TSTF-411 Revision 1 is followed, resulting in a single Note.

The RWST change (TS 3.3.2 Condition K) is discussed in Attachment 1, page 2 (items a and b), page 6 (item 19), and pages 19-21 in the section titled “Plant-Specific Evaluations for Functions not Evaluated Generically.” Since the RWST function was evaluated in the amendment application leading to LA 64, additional evaluation in this application is not required.

The MSFIS change (new TS 3.3.2 Condition S, revised SR 3.3.2.3 Note, corresponding Condition and SR changes for MSFIS in TS Table 3.3.2-1) is discussed in Attachment 1, page 6 (item 17) and page 22 (5th full paragraph). Since MSFIS is not covered in the WCAPs nor in the amendment application evaluation leading to LA 64, no changes to Conditions, Required Actions, or Surveillance Requirements are made for MSFIS.

2. Explain where the following items, not related to the WCAPs, are addressed in the amendment application
 - a. Discussion of the plant configuration risk management system (CRMS), including what, if any, risk-informed assessment for equipment outage configuration is performed and what structures, systems, and components does the program monitor and control. Has there been an NRC staff evaluation of the program?
 - b. Specific equipment out of service, with the proposed extended CTs, bypass test times, and surveillance frequency times, which could have a significant impact on plant risk. How does the CRMP deal with this equipment?
 - c. Discussion of the plant probabilistic risk assessment (PRA), and the validity, quality, and level of detail of the PRA, including the reasonableness of the PRA data, screening and truncation limits, level of detail, the sensitivity and uncertainty aspects, common-failure analysis, and updating the PRA.
 - d. Conflicts between the proposed CTs, bypass times, and surveillance frequency times with any applicable codes and standards, and any assumptions or inputs to the plant safety analyses.
 - e. The proposed amendment changes to TS-required CT, bypass testing time, and surveillance frequency times and notes for limiting conditions for operation (LCO) action conditions and surveillance requirements (SRs) are related to RTS/ESFAS functions in TS Tables 3.3.1-1 and 3.3.2-1. The related functions are the functions in the tables with required "Conditions" and "Surveillance Requirements" that will be changed. Is there a list of the related RTS/ESFAS functions involved in the proposed amendment?
 - f. Discussion about the effect of the proposed changes on any other aspect of the related RTS/ESFAS functions (see item e above) besides the specific proposed changes to TS-required CT, bypass testing time, and surveillance frequency times and notes. These other aspects would

include the following: their safety functions, instrumentation, circuitry, TS-required testing, requirements in TS Tables 3.3.1-1 and 3.3.2-1.

Responses:

- a. This is addressed in the Tier 3 discussion in Attachment 1, page 16. The Callaway Configuration Risk Management Program covers all structures, systems, and Components (SSCs) in the Callaway IPE internal events PRA and any additional SSCs determined to be risk-significant under the 50.65(a)(4) Maintenance Rule Program. NRC staff has used our (a)(4) program to benchmark their (a)(4) inspection manual and the NRC resident inspectors' routine inspections have included elements of our (a)(4) program. Although there has not been any staff Safety Evaluations written on the Callaway CRMP, the program was described for a RG 1.174/1.177 application in the DG AOT extension amendment application submitted on June 27, 2003 (ULNRC-4866).
- b. This is addressed in the Tier 2 discussion in Attachment 1, pages 13-16. See also the commitments in Attachment 5. The Technical Specification Bases for TS 3.3.1 Conditions Q and R and TS 3.3.2 Conditions C and G will also be appropriately modified to reflect the Tier 2 commitments (see Inserts 2A, 4, 6A, and 6B in Attachment 4).
- c. This item is not applicable to any plant requesting changes under these WCAPs. A generic PRA analysis was submitted by Westinghouse and approved by NRC for generic licensee reference and use, subject to satisfying the SE Conditions on the topical reports. The Callaway PRA was not used for this amendment application and the typical questions on PRA adequacy do not apply. The use of a generic PRA analysis is discussed in the responses to RAI #9 and RAI#16 in Westinghouse letter OG-96-110 for WCAP-14333. The use of a generic PRA analysis is also discussed in pages 8-4 thru 8-6 (especially the top of page 8-6) in WCAP-15376. Attachments 6A – 6C were developed by Westinghouse and are used to demonstrate the applicability of both WCAPs to Callaway. SE Conditions are specifically addressed in Attachment 1, pages 17 -19.
- d. There is no conflict with any codes and standards. Unlike the ASME Code for mechanical equipment testing and inspection, codes and standards for instrumentation applications do not get into the level of detail that specific time intervals for Completion Times, bypass testing allowances, or Surveillance Frequencies are prescriptively detailed. There is no impact on plant safety analyses since those analyses do not use Surveillance Frequencies as input assumptions and there is no requirement to assume a single failure when the plant has entered a TS Condition governed by the corresponding Completion Times or bypass

testing Notes. Those Completion Times and bypass testing limits are intentionally set to limit this single failure exposure to a relatively short duration. See the response to RAI #17 in OG-96-110 (attached behind Appendix E of WCAP-14333-P-A).

- e. See Attachment 1, pages 3-6, items 1-25 identify the specific RTS and ESFAS Functions involved for the mark-ups in Attachment 2.
 - f. This question was not specifically raised during the NRC staff review of WCAP-14333. This question, typically discussed under the area known as impact on defense-in-depth, evolved over time as risk-informed reviews matured. However, since this amendment application involves the same RTS and ESFAS equipment for both WCAPs, the NRC staff review of WCAP-15376 Section 9.0, as summarized in the NRC SE Section 3.2.1 for WCAP-15376, addresses this question. To summarize, we're not changing any design features or trip functions of this instrumentation and its circuitry. We're not deleting any Surveillance Requirements, only extending their periodicity. We're not changing the LCO Applicability, Required Channels, Conditions (other than Completion Time and bypass testing durations), or Allowable Values in TS Tables 3.3.1-1 and 3.3.2-1. Therefore, there is no adverse impact on defense-in-depth.
3. Explain where the following items concerning the application of either WCAP-14333 or WCAP-15376 separately at the plant are addressed in the amendment application and/or the WCAPs:
- a. The applicability of the WCAP analyses to the plant.
 - b. Tier 2 and Tier 3 analyses for the plant for the WCAP, including the CRMS insights, and how these insights are incorporated into the licensing decisionmaking process before taking equipment out of service.
 - c. Discussion of applicability of the plant PRA to the WCAP analysis.
 - d. Consistency of the actuation signals for the plant RTS/ESFAS functions with respect to those functions credited in the WCAP.
 - e. Consistency of plant-specific parameters to the WCAP analysis assumptions, including the plant test and maintenance intervals.
 - f. The applicability of the model assumptions for human reliability in the WCAP to the plant.

- g. Impact on the CDF, LERF, ICCDP, and ICLERP due to implementation of the WCAP, and a comparison to the risk measures in RGs 1.174 and 1.177.**
- h. What, if any, plant systems, instrumentation, and/or functions are being taking credit for in the WCAP, but which are not in the plant TSs.**
- i. Discussion of the RTS/ESFAS systems, instrumentation, and functions that are addressed in the WCAP. Does the WCAP deal with RTS/ESFAS functions instead of with the systems and instrumentation performing the functions, or does it deal with both? Does the instrumentation have to be analog? Where is this addressed in the WCAP and does the WCAP list or discuss the RTS/ESFAS systems, instrumentation, and/or functions being addressed in the WCAP.**
- j. Discussion of plant-specific evaluations for RTS/ESFAS systems, instrumentation, and/or functions which were not evaluated generically in the WCAP, and how these evaluations may be used in place of the WCAP as a basis for the amendment.**

Responses:

- a. The applicability of the PRA analyses, SE Condition 1 for both WCAPs, is discussed in Attachment 1 page 18 and Attachment 6 (includes 6A proprietary version, 6B non-proprietary version, and 6C withholding affidavit).**
- b. As discussed above in the response to items 2.a and 2.b, Tier 2 is discussed in Attachment 1, pages 13-16 and Tier 3 is discussed in Attachment 1, page 16.**
- c. See the response to items 2.c and 3.a above.**
- d. See the response to item 3.i below. The trip functions and analog channel inputs covered in the WCAPs and the TS mark-ups therein are also covered in the NRC-approved travelers TSTF-411 Revision 1 and TSTF-418 Revision 2 which were used to develop the TS mark-ups in Attachments 2 and 3. Deviations from these approved travelers are discussed in Attachment 1, pages 21 and 22.**
- e. See the 1st and 2nd paragraphs in Section 4.0 of Attachment 1, page 10, and Attachment 6 (includes 6A proprietary version, 6B non-proprietary version, and 6C withholding affidavit). Test and maintenance intervals are specifically discussed in the Attachment 6 comparison tables.**

- f. See Attachment 1, page 18 for WCAP-15376 SE Condition 4 which links to Attachment 6 (includes 6A proprietary version, 6B non-proprietary version, and 6C withholding affidavit). Especially see Attachment 6A, page 2 and Table 5. The operator actions modeled in WCAP-15376 bound those modeled in WCAP-14333.
- g. For WCAP-14333 risk metrics, see Attachment 1, page 11 (1st full paragraph). For WCAP-15376 risk metrics, see Attachment 1, page 11 (last paragraph). For numerical values of the risk metrics, and the combined impact of implementing both WCAPs at the same time, see the combined risk metrics results table on page 12 of Attachment 1 and the discussion immediately following that table.
- h. AMSAC is the only credited equipment not in the TS. There were no TS requirements imposed on AMSAC during NRC's review of our 10 CFR 50.62 submittals. See page 7, item 14 of the NRC SE, Alexion to Schnell, dated 12/24/87. AMSAC is governed by the commitments in FSAR Sections 7.7.1.11 and 15.8, as well as the NRC GL 85-06 supplemental QA program contained in the commitments of FSAR Section 7.7.1.11.2. For more background on the NRC staff review related to crediting AMSAC in these WCAPs, see the responses to RAI #12 (part b) and RAI #14.d with Table Q14.10 in OG-96-110 for WCAP-14333. See also the response to RAI #9 in OG-01-058 for WCAP-15376 – the ATWS risk contribution for Callaway identified in Tables 1 and 2 of Attachment 6A is approximately 1% of the overall CDF.
- i. This area was reviewed by NRC staff during the review of all three instrumentation system WCAPs. See Sections 2.0 and 6.0 of WCAP-14333. See Sections 6.0 and 7.0 of WCAP-15376. The changes in WCAP-14333 and WCAP-15376 are an extension of WCAP-10271 and its Supplements, which NRC approved for Callaway via LA 17 (9/8/86) and LA 64 (10/9/91).

As to the specific questions, PRA analyses are mainly concerned with RTS/ESFAS functions in fault tree analyses. See the response to RAI #9 in OG-96-110 for WCAP-14333 and page 8-5 (5th paragraph) in WCAP-15376. However, there is a link to the specific instrumentation systems and components used in a given trip function by virtue of the unavailability data used in fault tree quantification. Callaway participated in the failure data collection for both WCAPs as discussed in Attachment 6A, middle of page 1.

Callaway's application of these two WCAPs involves the analog 7300 Process Protection System and Nuclear Instrumentation System channels and the Solid State Protection System logic. Relay logic and Eagle 21

protection systems are also covered, but that equipment is not applicable to Callaway. See also the bottom of page 13 (Section 3.1.6) in the NRC SE for WCAP-15376. Callaway has addressed WCAP-15376 SE Condition 5 on Attachment 1, page 18 – we are not requesting approval for future digital upgrades in this license amendment request.

- j. See Section 11.0 in both WCAP-14333 and WCAP-15376. See also the response to RAI #5 in OG-96-110 (12/20/96) for WCAP-14333 in the “A” version of the WCAP behind Appendix E. This is also discussed in Attachment 1, pages 19 thru 21 in the section titled “Plant-Specific Evaluations for Functions not Evaluated Generically.” Since the RWST and SG water level EAM/TTD functions were evaluated in the amendment application leading to LA 64, additional evaluation in this application is not required. All previously accepted WCAP-10271 plant-specific evaluations are grand-fathered as acceptable under WCAP-14333 and WCAP-15376.

4. Explain where the following items concerning the application of only WCAP-15376 at the plant are addressed in the amendment application and/or the WCAP:

- a. Why is the CT and bypass time extensions in TS 3.3.1 Condition O addressed in WCAP-15376 instead of in WCAP-14333.
- b. Assessment of containment failures addressing any design or performance differences that may affect the proposed changes.
- c. Risk impact of concurrent testing of one logic cabinet and associated reactor trip breaker and its conformance with the WCAP evaluation, and RGs 1.174 and 1.177 guidance.

Responses:

- a. AmerenUE does not understand what prompted this question. We know of no place in the amendment application where WCAP-15376 was cited for the changes to TS 3.3.1 Condition O. These changes are based on WCAP-14333, as clearly indicated in the Bases changes for TS 3.3.1 Condition O in Attachment 4. New Reference 17 in the TS 3.3.1 Bases is WCAP-14333.

Perhaps this question is a result of confusing the Callaway TS 3.3.1 Condition O for the Turbine Trip Low Fluid Oil Pressure channels with STS NUREG-1431 Revision 2 TS 3.3.1 Condition O which applies to the Reactor Trip Breakers. In the Callaway TS, LCO 3.3.1 Condition R covers the Reactor Trip Breakers. If the question is intending to ask why

Westinghouse analyzed the RTB changes in WCAP-15376, that question is not within our purview. The Westinghouse topical reports are what they are.

- b. See the response to RAI #13 in OG-96-110 for WCAP-14333. See the response to RAI #10 in OG-01-058 for WCAP-15376. Callaway's containment is similar to Vogtle's containment and similar conclusions regarding containment performance can be drawn for both plants. See the response to WCAP-15376 SE Condition 1 in Attachment 1, page 17 and in Attachment 6A, page 1 (bottom half).
 - c. WCAP-15376 SE Condition 3 is discussed in Attachment 1, page 18. See also Attachment 1, bottom of page 11. The response to RAI #4 and RAI #11 in OG-02-002 answers this specific question (pages D-3 thru D-5 in Appendix D of WCAP-15376).
5. Explain where the following items concerning the application of both WCAP-14333 and WCAP-15376 are addressed in the amendment application:
- a. The effects and Impacts on the plant due to the implementation of both WCAPs together.
 - b. Impact on the CDF, LERF, ICCDP, and ICLERP due to the implementation of both WCAPs together, and a comparison to the risk measures in RGs 1.174 and 1.177.

Responses:

- a. See the response to item 3.g above. See the response to RAI #3 (part 1) in OG-01-058 dated 9/28/01 (pages D-8 thru D-10 in Appendix D of WCAP-15376). See Table 8.33 of WCAP-15376. There are no effects or impacts due to joint WCAP implementation that would not be experienced with sequential implementation. See the combined risk metrics results table on page 12 of Attachment 1 and the discussion following the table. See also the composite list of benefits on page 26 of Attachment 1.
- b. See the response to item 3.g above.