Callaway RICT & 50.69 LARs
NRC Pre-submittal Meeting

Ameren MISSOURI | Callaway Energy Center

Ameren Presenters

- Stephanie Banker, Vice President of Nuclear Engineering
- Andrew Burgess, 50.69 Project Manager
- Nathan Casey, Operations Supervisor-Licensed
- Justin Hiller, PRA Supervising Engineer
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Agenda

- Scope of Requests
- PRA Model Technical Adequacy
- PRA Model Uncertainties and Assumptions
- TSTF-439
- Potential Review Efficiencies
- Timeline for Submittals

Scope of License Amendment Requests

- 50.69 LAR based on NEI 00-04
- Risk Informed Completion Time (RICT) LAR based on TSTF-505 Rev. 2 and NEI 06-09
- TSTF-439 - Eliminate Second Completion Times Limiting Time From Discovery of Failure To Meet an LCO

50.69 License Amendment Request

- LAR is consistent with NEI 00-04
- Passive categorizations will be performed using the Arkansas Nuclear One (ANO) methodology
  - The use of this method was previously approved by the NRC in the Vogtle 10 CFR 50.69 application
- Based on Revision 9 to the NEI template
- Reviewed by NEI LAR Coordinating Committee

TSTF-505

- RICT LAR based on TSTF-505 Rev. 2 and NEI 06-09
- RICTs apply to 19 Limiting Conditions for Operation (LCOs), and 49 LCO Conditions
- Applicable in Modes 1 and 2
- New TS section 5.5.19 "Risk Informed Completion Time Program"
- Some Optional Variations from TSTF-505
- Obsolete one-time completion times will be removed from existing TS

Optional Variations from TSTF-505

- Condition 3.3.2.Q, AFAS and SGBIS from BOP ESFAS, one train inoperable
- Condition 3.3.2.R, AFAS and SGBIS from LOOP, one or both train(s) inoperable
- Condition 3.3.2.S, SLIS and Turbine trip/FWIS on MSFIS, one train inoperable
- Condition 3.7.2.A, One MSIV actuator train inoperable
- Condition 3.7.2.B, Two MSIV actuator trains inoperable for different MSIVs when the inoperable actuator trains are not in the same separation group
- Condition 3.7.5.B, One ESW supply to turbine driven AFW pump inoperable
- Condition 3.7.9.A, One cooling tower train inoperable

Optional Variations from TSTF-505

- Differences in Condition/Required Action (RA) wording
  - CEC TS are based on Revision 1 of NUREG-1431, “Standard Technical Specifications Westinghouse Plants”
- CEC plant-specific Conditions/RAs not in TSTF-505
- TSTF-505 Conditions/RAs not applicable to CEC
- Administrative changes
  - TS formatting changes
  - Changed some condition letters to use make use of previously Not Used conditions
- Cross-reference list for TSTF-505 markups to CEC site-specific TS RAs provided

TS 3.3.2 – Engineered Safety Feature Actuation System (ESFAS) Instrumentation (Example Attachment 1 Variation)

- Condition not in TSTF-505
  - TS 3.3.2.Q – One train inoperable, Restore train to OPERABLE status
    - Function 6.C-AFW Automatic Actuation Logic and Actuation Relays (Balance of Plant ESFAS)
    - Function 10.b-Steam Generator Blowdown and Sample Line Isolation Automatic Actuation Logic and Actuation Relays (BOP ESFAS)
  - 24-hour Completion Time (CT) front stop
  - Function is modeled in PRA
  - RICT added to RA consistent with TSTF-505 changes

TS 3.7.2 – Main Steam Isolation Valves (MSIVs), Main Steam Isolation Valve Bypass Valves (MSIVBVs), and Main Steam Low Point Drain Isolation Valves (MSLPDIVs) (Example Attachment 1 Variation)

- Condition not in TSTF-505
  - TS 3.7.2.A – One MSIV actuator train inoperable (specific to Callaway), Restore MSIV actuator train to OPERABLE status
  - 72-hour CT front stop
  - MSIV Actuators are not explicitly modeled in PRA
    - MSIV's are modeled; loss of the associated signal train will be used as a conservative surrogate for the MSIV actuators
  - RICT added to RA consistent with TSTF-505 changes

PRA Model Technical Adequacy

The PRA models associated with these submittals have been assessed against the ASME/ANS PRA Standard (RA-Sa-2009 and Part 5 Code Case) and RG 1.200, Revision 2, consistent with NRC RIS 2007-06.

All F&O closure reviews were performed in accordance with the process documented in Appendix X to NEI 05-04, NEI 07-12, and NEI 12-13 as accepted by the NRC (ML17079A427), as well as the requirements published in the ASME/ANS PRA Standard (RA-Sa-2009).

PRA Model Technical Adequacy

- Internal Events & Internal Flood PRA
  - Full scope peer reviewed to ASME/ANS RA-Sa-2009 in April 2019
  - Appendix X to NEI 05-04 finding closure reviews completed over several reviews, the final review being in June 2020
  - No open Finding F&Os

- Fire PRA
  - The Fire PRA was prepared using the methodology defined in NUREG/CR-6850, “Fire PRA Methodology for Nuclear Power Facilities”, to support a transition to NFPA Standard 805, “Performance Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants”
  - Full scope peer reviewed to ASME/ANS RA-Sa-2009 in October 2009
  - Appendix X to NEI 07-12 finding closure review completed over two reviews, final review in June 2020
  - No open Finding F&Os

PRA Model Technical Adequacy

- Seismic PRA
  - Full scope peer review conducted in June 2018 against the requirements of the Code Case for ASME/ANS RA-Sb-2013, as amended by the NRC on March 12, 2018.
  - Appendix X to NEI 12-13 Finding closure review completed over several reviews, the final review being in June 2020
  - No open Finding F&Os

- High Winds PRA and Other External Hazards Screening
  - The External Hazards Screening Assessment and the High Winds PRA were reviewed against the technical elements in Sections 6 and 7 of the ASME/ANS PRA Standard in April 2019
  - Appendix X to NEI 05-04 and 12-13 Finding closure review completed in Nov. 2019
  - No open Finding F&Os

PRA Model Technical Adequacy

- Special Note
  - As part of a PRA improvement update Callaway implemented the methodology provided in PWROG-18027-NP, for assessing the loss of room cooling in PRA modeling. During the peer review of the internal events PRA model a Finding F&O was generated related to implementation of this method.
  - Subsequently, the PWROG-18027-NP method was chosen by the PWROG and NEI to pilot the Newly Developed Methods (NDM) peer review process established in NEI 17-07 and PWROG-19027 Rev. 0.
  - Despite the assessment that this method did not necessarily meet the definition of a NDM, Callaway decided to suspend resolution of the associated F&O until the NDM peer review and closure of any F&Os on the method itself were completed using the process established in NEI 17-07 and the NDM requirements defined in PWROG-19027-NP.

PRA Model Technical Adequacy

- A peer review was conducted on the method provided in PWROG-18027-NP
  - Followed the guidance in NEI 17-07 Revision 2 and the refined NDM requirements defined in PWROG-19027 Rev.1
  - Based on the results of this review, all applicable NDM requirements are met and there are no open peer review Findings against the method in PWROG-18027-NP Rev. 0.
  - Documented in PWROG-19020-NP Rev. 1

- In June 2020, a focused scope peer review was conducted for the Callaway Energy Center. This review determined that all of the SRs that were examined, including the SR associated with the F&O related to implementation of the method in PWROG-18027-NP, satisfy Capability Category II, or higher, requirements. There were no new F&Os generated as a result of this review.

PRA Model Technical Adequacy

In conclusion:

- The method documented in PWROG-18027-NP Rev. 0 has been reviewed using the most current NDM requirements and peer review guidance
- There are no outstanding F&Os on the method
- Implementation of the peer reviewed method in the Callaway PRAs has also been reviewed with no open F&Os

PRA Model Uncertainties and Assumptions

Callaway followed the process defined in NUREG-1855, EPRI 1016737, and EPRI 1026511

- Assessment of potential sources key to respective applications and disposition/treatment for the application
- Identification of plant-specific sources and generic sources for all Hazards per EPRI 1016737
- Identification of Fire and Seismic PRA plant-specific sources and generic sources per Appendices of EPRI 1026511
- Consideration of generic Level 2 sources per EPRI 1026511 Appendix E as applicable to LERF
- Consideration of both parameter & completeness uncertainties

TSTF-439

- Eliminates second Completion Times (limiting time from discovery of failure to meet an LCO) for Required Actions in favor of administrative controls.
- As stated in TSTF-505, Revision 2, it is necessary to adopt TSTF-439 in order to adopt TSTF-505 for those Required Actions that are affected by both travelers.
- Combined implementation of TSTF-439 and TSTF-505, in lieu of getting a TSTF-439 License Amendment before submitting TSTF-505 LAR.

Potential Review Efficiencies

- LARs
  - Both RICT and 50.69 license amendment requests are consistent with their applicable templates or model applications
- PRA Models
  - Same PRA models used for both LARs
  - PRA technical adequacy and key sources of uncertainty similar for both applications
  - All models have been recently peer reviewed
    - NRC observed most of these peer reviews
    - No open Findings
- TSTF-439 needed for TSTF-505
  - Streamlined approach where both are reviewed together

Timeline for Submittals

- Two separate submittals will be made
  - 50.69 LAR is expected to be submitted in late 3rd Quarter 2020
  - RICT LAR is expected in 4th Quarter 2020
  - TSTF-439 will be submitted in conjunction with RICT
- Changes to the schedule will be communicated to the NRC Project Manager in a timely manner


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Additional Information

Example of TS with Second Completion Time

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems - Operating

LCO 3.8.9 Train A and Train B AC, DC, and AC vital bus electrical power distribution subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One AC electrical power distribution subsystem inoperable.	A.1 Restore AC electrical power distribution subsystem to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO
B. One AC vital bus subsystem inoperable.	B.1 Restore AC vital bus subsystem to OPERABLE status.	2 hours AND 16 hours from discovery of failure to meet LCO

(continued)

Example of TS with Second Completion Time

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One DC electrical power distribution subsystem inoperable.	C.1	Restore DC electrical power distribution subsystem to OPERABLE status.	2 hours AND 16 hours from discovery of failure to meet LCO
D. Required Action and associated Completion Time not met.	D.1 AND D.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours
E. Two trains with inoperable distribution subsystems that result in a loss of safety function.	E.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.9.1	Verify correct breaker alignments and voltage to required AC, DC, and AC vital bus electrical power distribution subsystems.	In accordance with the Surveillance Frequency Control Program