



July 2022

Arkansas Nuclear One (ANO)

Units 1 & 2

RICT License

Amendment Request

NRC Pre-Submittal Meeting



Agenda

Discuss License Amendments

- ANO TSTF-505-A Overview
- Variances from TSTF-505-A Rev. 2
- PRA Technical Adequacy
- Evaluation of PRA Uncertainties and Assumptions
- Modeling of FLEX in PRA
- External Hazards

Discuss Efficiencies

Timeline of Submittal

Closing Remarks

ANO TSTF-505-A Overview

RICT LAR based on TSTF-505-A Rev. 2

- ANO1- Babcock and Wilcox
- ANO2- CE design
- TS markups follow Technical Specification Task Force (TSTF) for Babcock and Wilcox (B&W) (NUREG-1430) and Combustion Engineering (CE) (NUREG-1432), respectively
 - Attachment 4 will provide cross-reference between the Improved Technical Specifications (ITS) included in TSTF-505, Rev. 2 and the ANO1/ANO2 plant-specific TS
- ANO1 TS are ITS, but ANO2 TS are based on NUREG-0212 and are custom. They use a different format from TSTF-505 and ITS, and there is some variation in numbering and titles. Most of the differences are administrative and do not affect applicability of the TSTF to ANO2; however, non-administrative differences between the TSTF and ANO2 TS will be explained in the body of the application.
- Most variances from TSTF-505 are due to nomenclature and section number sequencing

ANO TSTF-505-A Overview

- Some TSTF-505 LCOs/Conditions not in ANO1/ANO2 TS
- Some RICTs added to plant-specific LCOs that are not explicitly listed in TSTF-505 (ANO2); however, the functions are discussed in the TSTF under other NUREG 1432 TSs.
 - Example: NUREG-1432 LCO 3.3.5 “ESFAS Logic and Manual Trip” Condition C is included in TSTF-505; however, the ANO2 TS that addresses ESFAS Manual Trip and Actuation Logic is in Table 3.3-3 of TS 3.3.2.1 “ESFAS Instrumentation”, which lists the Functional Units for ESFAS Instrumentation and LCO Actions in a different manner.
- A Risk-Informed Allowed Outage Time will not be used for any condition where there is a loss of specified safety function.
 - Enclosure 1 (Table E1-1 “In-Scope TS/LCO Conditions to Corresponding PRA Functions”) will provide clear information on design criteria and PRA modeling considerations.

PRA Technical Adequacy

ANO1 and ANO2

- Full Power Internal Events (FPIE) Probabilistic Risk Analysis (PRA) – Peer Reviewed to RG 1.200 “Acceptability of Probabilistic Risk Assessment Results for Risk-Informed Activities”, Rev. 2
- Closure review performed and all findings from peer reviews were successfully closed
- No Open Finding F&Os from the Internal Events and Internal Flood PRA Models

- Fire PRA – Peer Reviewed to RG 1.200 Rev. 2
- Closure reviews performed and all findings from peer reviews were successfully closed
- No Open Finding F&Os from the Internal Fire PRA Model

Evaluation of PRA Uncertainties and Assumptions

ANO1/ANO2 submittals will follow the process defined in NUREG 1855, “Guidance On the Treatment of Uncertainties Associated with PRA in Risk-Informed Decision Making”, Rev. 1, and the guidance in EPRI 1016737, “Treatment of Parameter and Modeling Uncertainty for PRA” and EPRI 1026511, “Practical Guidance On the Use of PRA in Risk-Informed Applications With A Focus On the Treatment of Uncertainty”, including:

- Identification of Internal events/internal flooding PRA model plant-specific sources, and generic sources per EPRI 1016737
- Identification of Internal Fire PRA model plant-specific sources, and generic sources per EPRI 1026511 Appendix B, “Generic Sources of Fire PRA Modeling Uncertainty”
- Consideration of generic Level 2 model sources per Appendix E, “Generic Sources of Level 2 PRA Modeling Uncertainty” of EPRI 1026511, as applicable to Large Early Release Factor (LERF)
- All sources of uncertainty were reviewed specifically for the RICT application, including performing RICT-specific sensitivities.

FLEX

ANO1/ANO2 submittals will provide discussion of FLEX in Enclosure 9, including:

- PRA Credit for FLEX
 - Data Sources and Updates
 - Human Actions
 - Sensitivities
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- ANO will follow latest industry guidance for crediting FLEX in the PRA models in accordance with the “Updated Assessment of Industry Guidance for Crediting Mitigating Strategies In Probabilistic Risk Assessments” (May 6, 2022 Franovich Memo ML22014A084).

External Hazards Screening Process

Individual Plant Examination of External Events (IPEEE) Initial Screening (Consistent with 50.69 submittal)

- Reviewed Current Hazard Information and Updated Screening Analysis
- Updated Analysis Using Part 6 Screening Criteria of ASME/ANS PRA Standard RA-Sa-2009
- Performed conservative or bounding analyses where appropriate

RICT – Incorporates NEI 06-09, “Risk-Informed Technical Specification Initiative 4b, Risk-Managed TS (RMTS) Guidelines” guidance.

- Justify exclusion of external risk sources from the PRA models based on their insignificance to the calculation of configuration risk

ANO1 and ANO2 will apply a seismic and high wind penalty in the risk evaluations performed as part of the process to calculate a RICT. In this application, all other external hazards are considered to be insignificant and will not be included in the RICT calculation.

External Hazards - Flooding

Screens Out for ANO1 and ANO2 (Same screening criterion as 50.69)

- Event damage potential is less than events for which plant is designed.
- Focused evaluation (FE) demonstrated that key SSCs are not impacted by floodwaters during the Local Intense Precipitation (LIP) event. The calculated ponding levels were below the controlling current design bases (CDB) event.

External Hazards – Extreme Wind or Tornado / Missiles

Bounding Mean Core Damage Frequency (CDF) is expected to be $< 1\text{E-}6/\text{yr}$ based on conservative risk analysis, including updated TORMIS calculations.

- Although average maintenance CDF $< 1\text{E-}6/\text{yr}$, some out-of-service RICT configurations are $> 1\text{E-}6/\text{yr}$
- Will add a 'Penalty Factor' to account for tornado missile risk for RICT calculations.

External Hazards - Seismic

Not Screened Out

- Seismic Hazard is Moderate.
- RICT – Will Use Seismic Penalty Approach for RICT.
- Proposed Seismic Penalty Method is Consistent with Previous NRC Approved RICT LARs.

Efficiencies

ANO1/ANO2 Previously submitted 50.69, “Risk-Informed Categorization and Treatment of Structures, Systems and Components for Nuclear Power Reactors” License Amendment Requests (LARs)

- PRA
 - Updated PRA technical adequacy and sources of uncertainty
 - Assessments are application-specific in terms of details to be considered
- External Hazards
 - Common screening of hazards that can be screened
 - Application-specific assessment of screening including seismic and high winds penalty factors for RICT
- 50.69 – ANO1 Safety Evaluation (SE) Received; ANO2 SE (Pending)

Timeline for Submittals

ANO1/ANO2 – RICT LARs

- September / October
- Requesting 12 Month Approval

CLOSING REMARKS