



Wolf Creek

**Accident Analyses
Methodology Transition LAR
Public Meeting**

October 30, 2018

Opening Remarks



- Purpose:
 - Timely Resolution of RAI documented within ADAMS Accession No. ML18270A094
- Agenda:
 - Introduction
 - License Amendment Request (LAR) Description
 - Submittal Timeline
 - Thermal Conductivity Degradation Methodology Changes
 - LAR Completion
 - Conclusion

Introduction



- Wolf Creek and Westinghouse are focused and committed to complete the Transition program
- Recent requests for additional information puts the LAR schedule at significant risk
- Discussion today is to agree upon approach for timely implementation of the transition to Westinghouse methods
 - Providing potential options for consideration

License Amendment Request (LAR) Description



- The transition to Westinghouse core design and safety analyses methodologies is being performed to utilize current methodologies and provide more consistent alignment with the Westinghouse fleet of plants
- Wolf Creek safety analyses methodologies and analyses of record are roughly 20 years old and this transition will bring Wolf Creek up to the latest industry best practices as well as closing all open issues
- Furthermore, Wolf Creek was facing depleted core design and safety analysis engineering experience and capability within Nuclear Engineering in addition to the ongoing difficulties associated with hiring, retaining, and training personnel to update and maintain the safety analysis

Transition to updated methodologies is paramount for Wolf Creek long term successful operation

Submittal Timeline



- August 2016 – Transition pre-submittal meeting with the NRC
- January 2017 – Transition LAR re-submitted to the NRC for review
- May 2017 – Transition LAR accepted for review
- June – December 2017 – Multiple RAIs received
- January 2018 – P-A version of PAD5 Topical Report issued
- April 2018 – NRC audit to facilitate RAI response
- September 2018 – Draft RAIs related to TCDs received
- October 2018 – Final TCD RAIs received
- May 2019 – Target NRC approval of the Transition program

**Collaboration amongst NRC, WCNOC,
and Westinghouse is needed to support
desired approval timeline**

Thermal Conductivity Degradation Methodology Changes



- NRC requested additional information on two safety analysis events (Rod Ejection and Steamline break) regarding appropriately including the effects of thermal conductivity degradation (TCD)
- While the transition LAR referenced the TCD safety evaluation (LTR-NRC-12-18), the NRC has requested additional information to comply with GDC27 and GDC28
- To support the RAI response for a timely approval of the transition LAR, WCNOC recommends a descriptive evaluation and quantitative examples to address thermal conductivity degradation
 - Originally submitted transition analyses supported by LTR-NRC-12-18 conclusions will form the licensing basis
 - Results will demonstrate that the acceptance criteria for the Rod Ejection and Steamline break events are met when accounting for TCD

**Rationale behind proposed RAI response
requires a proprietary discussion**

Closed Portion



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Technical Interfaces for PAD5 Implementation

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Thermal Conductivity Degradation Methodology Changes

- Explicitly accounting for TCD in the licensing basis within the RAI referenced analyses requires the following:
 - Rod Ejection and Steamline break analyses provide part of the basis for fuel centerline melt Technical Specification (TS) Safety Limit (SL) 2.1.1.2
 - Explicitly accounting for TCD in the Westinghouse methodology can only be accomplished with PAD5
 - Use of PAD5 in the re-analyses of the events described in the RAIs may incur relaxation of the current TS SL 2.1.1.2 value
 - If this is the case, all other not-LOCA analyses that support the basis of TS SL 2.1.1.2 would also require re-analysis
 - WCAP-17642-P-A provides a basis for crediting a relaxed fuel centerline temperature limit
 - Due to the timing of the question and consistent with the Westinghouse-NRC January 2018 (LTR-NRC-18-7) discussion, a full Not-LOCA PAD5 transition cannot be completed within the current license amendment review timeframe



Thermal Conductivity Degradation Methodology Changes

- Explicitly accounting for TCD in the licensing basis within the RAI referenced analyses requires the following (cont.):
 - Performance of limited TS SL 2.1.1.2 analyses with PAD5 is not a viable option
 - Per Westinghouse NRC letter LTR-NRC-16-57, PAD5 implementation [

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LAR Completion

- With these considerations, the following is recommended to complete the Transition LAR on the desired schedule
 - Descriptive evaluation and quantitative examples to address thermal conductivity degradation
 - Evaluation and example analysis results will demonstrate that the acceptance criteria for the Rod Ejection and Steamline break events are met when accounting for TCD
 - Supports a transition implementation date coincident with the Fall 2019 Refuel
 - Expect to meet the 2 year review goal
 - As discussed during the RAI clarification call, when addressing the rod ejection analysis, the current calorie per gram limit will be retained



LAR Completion

- Alternatively, the following allows for implementation of TS SL 2.1.1.2 limit change as part of the Transition LAR but outside of the desired schedule
 - Results of the Rod Ejection and Steamline break events will be provided in the RAI responses
 - All analyses that support the fuel melt TS limit will be revised to explicitly account for TCD
 - Full Not-LOCA PAD5 implementation will be introduced into the licensing basis via 50.59
 - Due to reload schedule requirements associated with cycle-specific planning and consistent with Turkey Point (ML18086A154, March 2018), implementation of PAD5 Not-LOCA will occur upon completion of required analysis effort on a forward fit basis by no later than the next reload campaign following approval of the Transition program LAR

Conclusion

- The transition to Westinghouse core design and safety analyses methodologies is being performed to utilize current methodologies and provide more consistent alignment with the Westinghouse fleet of plants
- TS SL 2.1.1.2 introduces complexities in responding to the TCD RAIs
- Concurrence on RAI response approach is required to ensure timely method transition approval

WCNOC is committed to transitioning to Westinghouse methods

