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10 CFR 50 Appendix K Application to SMR-160

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Agenda

- Introductions
- Purpose & Outcome
- LOCA Acceptance Criteria
- 10 CFR 50 Appendix K Applicability
- 10 CFR 50.46 Cladding Material Exemption
- Open Forum

Purpose & Outcome

- PURPOSE
  - To provide an overview of the SMR-160 LOCA acceptance criteria, applicability of 10 CFR 50 Appendix K to SMR-160 LOCAs, and identify an exemption to 10 CFR 50.46 as a result of SMR-160 cladding material.

- OUTCOME
  - To obtain feedback from the NRC staff on SMR-160's LOCA acceptance criteria, applicability assessment of Appendix K, and plan for the 50.46 cladding material exemption request.

Background

- The SMR-160 LOCA evaluation model (EM) will follow the guidance in Reg. Guide 1.203 and satisfy the applicable requirements of 10 CFR 50 Appendix K
- The SMR-160 is designed to reduce the consequences of design basis LOCAs compared to the existing light water reactor fleet for which 10 CFR 50 Appendix K was developed
- Some of the phenomena pertaining to 10 CFR 50 Appendix K do not occur during SMR-160 design basis LOCAs
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SMR-160 LOCA Acceptance Criteria

- SMR-160 design basis LOCAs will use conservative surrogate acceptance criteria to replace the peak clad temperature (PCT), oxidation, and hydrogen generation acceptance criteria defined in 10 CFR 50.46
- The SMR-160 LOCA acceptance criteria are:
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LOCA Acceptance Criteria – Questions for NRC Staff

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Appendix K IA – Sources of Heat

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Appendix K IA – Questions for NRC Staff

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Appendix K IB – Swelling and Rupture of the Cladding and Fuel Rod Thermal Parameters

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Appendix K IC – Blowdown Phenomena

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Appendix K IC1 – Questions for NRC Staff

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Appendix K IC2 and IC3 – Frictional Pressure Drops and Momentum Equation

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Appendix K IC4 and IC5– Critical Heat Flux and Post CHF Heat Transfer

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Appendix K IC6 – Pump Modeling

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Appendix K IC7 – Core Flow Distribution During Blowdown

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Appendix K ID – Post Blowdown Phenomena; Heat Removal by the ECCS

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Questions for NRC Staff

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Additional 50.46 Cladding Material Exemption

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Open Forum