

NRC Standards Forum: NRC Endorsement of ASME BPVC Section III, Division 5

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Background – FY16-17

Implementation Action Plans (July 2017) to support NRC Vision and Strategy (December 2016)

1. Acquire/develop sufficient staff knowledge, tech. skills, capacity to perform non LWR regulatory reviews
2. Acquire/develop sufficient computer codes/tools to perform non-LWR regulatory reviews
3. Establish a more flexible, RIPB non-LWR review process within the bounds of existing regulations, incl. CDAs, staged reviews
4. **Facilitate industry codes & standards development needed to support the non-LWR lifecycle, including fuels & materials**
5. Identify & resolve tech-inclusive non-LWR policy issues
6. Develop a structured, integrated communications strategy for internal and external stakeholders with non-LWR interests)

NRC Endorsement of ASME BPVC Section III, Division 5

- Current nuclear power designs operate within a thermal range of 275°C to 315°C.
- Advanced reactor designs have operating thermal ranges that vary widely between 480°C and 1000°C.
- There is no NRC-endorsed code of construction for nuclear reactors operating above 425°C (800°F).
- American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME BPVC) Section III, Division 5 provides design, construction, certification, and quality assurance rules for metallic components operating in excess of 800°F, graphite core structures, and ceramic-composite components.
- A letter dated June 21, 2018 from ASME (ML18184A065) requested that the NRC review and endorse the 2017 Edition of ASME BPVC Section III, Division 5 (NRC Response Letter: ML18211A571)

Review and Endorsement Process

- NRO-Lead with support from RES/DE and NRR/DE
- **Objective:** Official NRC Endorsement of the 2017 Edition of ASME BPVC Section III, Division 5
- **Anticipated Product (August 2020):** A draft regulatory guide for public comment that includes the 2017 ASME BPV Code Section III, Division 5 as an endorsed method of constructing Advanced Reactor Designs, subject to any conditions the staff deems necessary.
- The NRC is participating on two ASME/NRC task groups:
 - Metallic Materials
 - Graphite and Ceramics
- Contractors: PNNL, ORNL, ANL, Commercial
- Stakeholder engagement throughout the review

Review and Endorsement Process

Current Status:

- The endorsement team has started Task A, Project Planning
 - Establishing the scope, schedule, and NRC points of contact
- Process:

