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PWROG – Modify Licensing Basis to Maintain A Loose Parts Detection System Per RG 1.133

September 12, 2019

Agenda

- **Introductions**
- **Opening Remarks**
- **Meeting Objective & Desired Outcome**
- **Background**
- **Survey/OE Search Results**
- **TR Submittal Schedule**
- **Open Discussion**
- **Closing Remarks**

Introductions

PWROG

- **Jordan Vaughan (Duke Energy)**
- **Chad Holderbaum (PWROG)**
- **James Andrachek (Westinghouse)**
- **Gary Peters (Framatome Inc.)**
- **Philip Opsal (Framatome Inc.)**

Opening Remarks

Project Intent

- The intent of this project is to justify the removal of the commitment to Regulatory Guide (RG) 1.133, “LOOSE-PART DETECTION PROGRAM FOR THE PRIMARY SYSTEM OF LIGHT-WATER-COOLED REACTORS” and allow removal of the Loose Parts Detection System (LPDS) equipment from PWR plant’s licensing basis.

Opening Remarks

- Removal of the licensing basis commitment to maintain LPMS was previously approved for the BWR fleet in January 2001 by SER (ML010310355) by Topical Report NEDC-32975 (P), “Regulation Relaxation for BWR Loose Parts Monitoring Systems”

Opening Remarks

- **PWROG Conducted a survey and gathered information about**
 - OE related to loose part detection
 - Operating history of LPDS (unavailability, false alarms)
 - Verify lack of safety-related detections
 - Verify LPDS is not modeled in Plant PRAs and thus no impact on CDF or LERF
 - Cost of dose for surveillance and maintenance
 - Licensee disposition of known or possible loose parts

Meeting Objective & Desired Results

- The objective of this meeting is for the PWROG to present the concept and obtain NRC feedback for a PWR Topical Report which will justify eliminating the LPDS from PWR licensing bases.

Background

- RG 1.133, “Loose-Part Detection Program for the Primary system of Light-Water-cooled Reactors”, Rev. 1, May, 1981 recommended installation of a LPDS in light-water reactors.
- Most plants licensed in the 1980’s have an LPDS installed as part of their licensing basis to meet RG 1.133.

Background

- In RG 1.133, the staff stated:
 - The primary purpose of the loose-parts detection program is the early detection of loose metallic parts in order to avoid or mitigate damage to safety-related components.
 - A second purpose is to minimize radiation exposure to station personnel by providing early detection and general location of abnormal structural conditions.

Survey/OE Search Results

1. No plant reported that the LPDS detected a failed or weakened safety-related component.
2. No plant takes credit for the LPDS in their plants Probabilistic Risk Assessment (PRA).
3. No plant has taken credit for LPDS in their License Renewal Application (LRA).

Survey/OE Search Results

- Distractions: False Alarms
- Radiation Exposure
- Cost

Survey/OE Search Results

Prevention and Alternate means of Detection

All plants reported that they take action to prevent loose parts with an aggressive Foreign Material Exclusion Program.

All plants reported that they have and use alternate means for detection of loose parts.

TR Submittal Schedule

- NRC Pre-Submittal Meeting 02/2020
- PWROG Topical Report Submitted to NRC 04/2020

Open Discussion

Closing Remarks

- The expected safety benefits of an LPDS described in RG 1.133 have not been realized by the PWR fleet.
- The PWROG will be submitting a Topical Report to support removal of the LPDS from a PWR plant's licensing basis.
- Even with the licensing basis removal, some plants may decide to maintain a LPDS at certain locations as an asset protection tool.