NRC Feedback on EPRI Integrity Assessment Guideline Appendix G Implementation

NRC Meeting with

Industry Steam Generator Task Force (SGTF)

September 8, 2022

U.S.NRC

United States Nuclear Regulatory Commission

Protecting People and the Environment

Background

- Technical specifications require a steam generator tube inspection report (SGTIR) be submitted to the NRC
- Appendix G in Revision 5 of EPRI Steam Generator Integrity Assessment Guideline (IAG) provides a template for the SGTIR
  - Plants adopting Technical Specifications Task Force- 577 (TSTF-577)[1] shall include the additional information in the template
  - For plants not adopting TSTF-577, the IAG recommends considering use of the template

[1] Or converting to Revision 5 of Standard Technical Specifications

Purpose

- NRC is receiving SGTIRs based on the IAG Appendix G template
- NRC staff wanted to highlight some particularly good examples of information provided in recent SGTIR submittals

Tubes With Increased Degradation Susceptibility

- Appendix G highlights multiple sub-populations of tubes as examples:
  - Section 1
    - Tube sub-populations with increased degradation susceptibility (e.g., tubes with potential high residual stress ("- two sigma"), other areas based on growth rates or design features)
  - Section 3
    - Periphery tubes in the high-flow region
    - Potential high residual stress tubes
    - Hot-leg dents/dings greater than 5 volts

Template: "4. The nondestructive examination techniques utilized for each degradation mechanism found," page G-4

NDE Detection Techniques utilized

Detection probe	ETSS used for Detection	Degradation Mechanism	Location / Applicability
Bobbin	I96041.1 Rev 5	Wear	AVB locations
	96004.1 Rev 13		TSP, FDB locations
Bobbin +Point™	27091.2 Rev 2 21998.1 Rev 4		foreign objects
Array	20400.1 Rev 5		
Bobbin	96005.2 Rev 9	Pitting	freespan, sludge pile
Array	24998.1 Rev 1		sludge pile
Bobbin	I-28411 Rev 4	Axial ODSCC	Broached TSPs, FDB locations
	I-28413 Rev 5		freespan
	24013.1 Rev 2 10013.1 Rev 1		DNG/DNT ≤5V
+Point™	22401.1 Rev 4 96703.1 Rev 17 I-28424 Rev 4 I-28425 Rev 4		DNG/DNT >5V
	10411.1 Rev 0		low row U-bends
Array	20400.1 Rev 5		sludge pile/ expansion transition
Array	20501.1 Rev 4	Axial PWSCC	expansion transition, BLGs/OXPs
	20500.1 Rev 4	Circ PWSCC	
+Point™	96511.1 Rev 16 96511.2 Rev 16 99997.1 Rev 10	Axial/Circ PWSCC	low row U-bends

5

Template: "4. The nondestructive examination techniques utilized for each degradation mechanism found," page G-4

NDE Sizing Techniques utilized

Sizing probe	ETSS used for Sizing	Degradation Mechanism	Location / Applicability
Bobbin	96004.3 Rev 13	Wear	AVB locations
+Point™	96910.1 Rev 11	Wear	Broached TSP locations
+Point™	21998.1 Rev 4	Wear (VOL)	Foreign object wear
			Wear due to legacy sludge lance (maintenance) equipment
+Point™	I-28432 Rev 2	Axial ODSCC	At dented broached TSP locations (08H, 08C)
+Point™	I-28431 Rev 3	Axial ODSCC	At HL TTS Expansion Transition

Well Written Example

- ML22108A224
  - Detailed explanation about the definitions of dents and dings, in both the historical and current use context
  - Feed regulating valve disc stack photograph

Summary

- Use of IAG Revision 5 Appendix G Template has resulted in more comprehensive SGTIRs

- This presentation highlighted examples of well written SGTIRs

8

Questions