Background

Designed as a diagnostic planning tool, Westinghouse’s Secondary Side Condition Monitoring and Operational Assessment (SS-CMOA) is a living document that evaluates the secondary side of the steam generator (SG) and interfacing systems. Various secondary side inputs are evaluated in the SS-CMOA over the life of the SG, including, but not limited to:

- SG design and materials of construction
- SG chemistry, SG deposit history
- Thermal performance
- SG maintenance parameters

This tool assists in developing long-term strategies that align SG operation and performance with utility-specific goals.

Description

The SS-CMOA provides technical justification for SG services in accordance with a utility’s SG asset management program. It is recommended to perform the SS-CMOA following completion of SG maintenance activities in a refueling outage.

The SS-CMOA performs the following functions:

- Supports decisions made by the SG management team
- Optimizes services and identifies unnecessary scope
- Evaluates multiple maintenance and operating scenarios for optimized long-term planning
- Highlights strengths in secondary side programs and identifies areas for improvement
- Satisfies Chapter 10 of the Electric Power Research Institute (EPRI) Steam Generator Integrity Assessment Guidelines, which specifies the requirement to include measures to maintain the SG secondary side integrity in a utility’s SG Program
- Provides diagnostic feedback for evaluating abnormal operating conditions and changes in maintenance scope
- Provides a comprehensive history of secondary side chemistry and SG performance

Steam Generator Deposit Inventories Starting from Cycle 9

SG Deposit Inventory Projection, Considering the Long-term SG Cleaning Strategy
Benefits

The SS-CMOA can provide the following benefits to utilities:

- Supports cost savings initiatives by technically justifying, where appropriate, reduction or elimination of SG inspections, advanced SG cleaning, and other SG maintenance services

- Provides technical data for utility personnel to share with management to support operational and maintenance decisions

- Serves as a convenient reference in Degradation Assessments as well as tube integrity Condition Monitoring and Operational Assessments

- Evaluates impacts of secondary side water chemistry, SG maintenance and other operational changes

- Acts as a supporting document during Institute of Nuclear Power Operations (INPO) audits and internal self-assessments

- Serves as a training tool for new utility personnel

Experience

Over a dozen plants have utilized the SS-CMOA to support their long-term SG operations. Several customers perform the SS-CMOA every time SG outage maintenance scope is completed.

Ten-Cycle SG Outage Recommendations

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Additional Rotating Pancake Coil (+Point™) Data Collection to Assess Quatrofoil Blockage

Sludge Analysis

Steam Drum Inspection Report

SS-CMOA Update**

* A full-bundle ASCA is tentatively planned for 2R33.

** The steam drum inspection frequency of inspecting all four SCs every six cycles would be confirmed or modified in the 2R20 Steam Drum Inspection Report.

*** A ‘skip’ SS-CMOA may also be performed to assess operating conditions in outages when secondary services are skipped.

utility which contains: