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STEAM GENERATOR SNUBBER ELIMINATION

Keywords: COMPONENT RELIABILITY; SNUBBER ELIMINATION; STEAM GENERATOR; WOLF CREEK; UNION ELECTRIC

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Objectives: Describe the Westinghouse Steam Generator Snubber Elimination Program and its implementation at the Wolf Creek and Callaway plants.

Comments: The continuing need to monitor, inspect, and periodically test the performance of the SG snubbers are costly in terms of exposure and man-hours. However, recent advancements in computer technology have made it economically feasible to perform the engineering analyses necessary to eliminate 100% of the SG snubbers in nuclear power plants.

The Westinghouse Steam Generator Snubber Elimination Program implements the load reduction techniques of Leak-Before-Break, Elimination of Arbitrary Intermediate Breaks, and ASME Code Case N-411 damping. The new approach now also includes non-linear time history seismic and pipe break analyses to more accurately predict the loadings on the reactor coolant system components.

The Wolf Creek Nuclear Operating Company & the Union Electric Company are embarking on a program to eliminate all 32 Steam Generator Large Bore Hydraulic Snubbers. The resulting savings in reduced man-rem exposure, maintenance, and inspection is significant. The payback period is estimated to be just two years.

Remarks/Potential for dose limitation: The benefits of SG snubber elimination identified by Wolf Creek and Union Electric are as follows. Similar benefits would be experienced at other nuclear stations.

- Achieves ALARA: exposure reduced by approximately 3 man-rem per outage.
- Eliminates visual inspection and functional testing: saves $35,000 per outage.
- Reduces the risk of outage extension and unplanned outages
- Reduces maintenance and refurbishment costs: saves $15,000 per outage
- Reduces outage activities
- Improves plant reliability by reducing congestion and snubber failures
- Increases plant availability

References: Stirzel, C., "Steam Generator Snubber Elimination," *1993 Radiation Exposure Management Seminar*, Westinghouse, Pittsburgh, Pennsylvania, 1993.

Duration: from: 1992 to: 1993

Funding: N/A

Status: In progress

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