EVALUATION OF FACTORS AFFECTING RADIATION FIELD TRENDS IN WESTINGHOUSE-DESIGNED PLANTS

Keywords: OPERATIONAL AND MAINTENANCE TECHNIQUES; RADIATION FIELD TREND; RADIATION FIELD CONTROL; RADIATION FIELD; COBALT; WATER CHEMISTRY; STEAM GENERATOR; DECONTAMINATION

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Objectives: Quantify the effects of cobalt input variations, operational chemistry, steam generator replacements, and decontamination on plant dose rates.

Comments: This is a summary of the third report of the Standard Radiation Monitoring Program initiated by Westinghouse and EPRI in 1977. It discusses the evaluation techniques and presents the results of the evaluation.

Remarks/Potential for dose limitation: Some of the changes in radiation fields are:

* Plant startup with Zircaloy vs Inconel fuel grids: 19% reduction
* Coordinated vs Uncoordinated. Chemistry: 15% reduction
* Inconel fuel grids without high cobalt impurity vs ones with high impurity: 18% reduction
* Overall improvement with initial Zircaloy fuel grids and coord. chemistry: 45% reduction
* Channel head radiation levels in plants that have replaced steam generators with low Co impurity tubing are 65% of previous levels
* The dose rate in channel heads that have been chemically decontaminated builds up to only 60% of pre-decontamination levels
* Modified primary coolant chemistry (PCC) results in about 25% lower component dose rates compared with coordinated PCC
* An elevated coolant pH results in lower radiation levels by a factor of two compared to modified or coordinated pH
* Plants started in 1985 and after have a factor of 2 less doses compared to pre-1985 plants


Duration: from 1977 to 1991

Funding: N/A

Status: Completed

Last Update: August 27, 1993