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DOSE RATE TRENDS AND CHEMISTRY AT SIEMENS-DESIGNED BWRs

Keywords: CONTAMINATION PREVENTION; OPERATIONAL AND MAINTENANCE TECHNIQUES; DOSE RATES; SIEMENS; BWR

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Objectives: Investigate the dose rate trends and chemistry at Siemens-designed BWRs.

Comments: Current Status

- All plants were operating with Normal Water Chemistry (NWC)
- None of the plants has considered Hydrogen Water Chemistry or Zinc Injection
- As far as there are data available the conclusion cannot be drawn that there is a remarkable influence of water chemistry on the Co-58 and Co-60 activity concentrations. However, the material concept seems to have a major influence on these values.

Remarks/Potential for dose limitation:

Conclusions from Occupational Radiation Exposures and from the Dose Rate Measurements

- The plant with external recirculation piping has the highest radiation fields and the highest exposure
- Forward pumped units show higher radiation levels
- However, cascading or forward pumping of heater drains has no influence on personnel exposures
- Stellite replacement is most effective in reducing radiation fields and exposure rates

Two major steps can be identified in order to reduce radiation fields and occupational radiation exposure in Siemens/KWU BWRs:

- Replacement of the external recirculation piping
- Partial replacement of cobalt-base alloys in the RPV

References: Reitzner, U., Marchl, T., and Riess, R., "Dose Rate Trends and Chemistry at Siemens-designed BWRs," *Radiation Field Control Seminar*, Electric Power Research Institute, Seattle, Washington, 1993.

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Status: In progress

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