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EFFECT OF HYDROGEN WATER CHEMISTRY ON CHEMICAL DECONTAMINATION

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Objectives: To investigate the effect of Hydrogen Water Chemistry on various chemical decontamination processes.

Comments: Alternate water chemistry control programs have been implemented by an increasing number of U.S. Boiling Water Reactors over the past five years. The most significant program is Hydrogen Water Chemistry (HWC) with fourteen (14) U.S. BWRs currently adding hydrogen to the feedwater to mitigate stress corrosion cracking of reactor piping and pressure vessel components. Sixteen BWRs are also adding zinc to reduce the uptake of Co-60 in the primary system oxide film.

Remarks: Until two years ago, it appeared that HWC and zinc injection had no adverse effect on the results of chemical decontamination, as average decontamination factors (DFs) in the range of 5-10 were routinely obtained. However, more recent experience at Brunswick, Dresden, and Duane Arnold has shown that the oxide films in BWRs operating with HWC in the protective range are more resistant to the conventional decontamination processes and require plant specific testing to ensure maximum effectiveness. The types of oxide films encountered in these plants and the decon process adjustments necessary to assure success were the target of this investigation.

References: Jordan, A. R., D. Schneidmiller, and S.L. Watson, "Effect of HWC on Chemical Decontamination" Proceedings, EPRI Radiation Field Control and Chemical Decontamination Seminar, Tampa, Florida, November 1995, available from EPRI Distribution Center, P.O. Box 23205, Pleasant Hill, CA 94523, Phone: (501)934-4212.

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