

### **3476. Chemical Decontamination With Preoxidation Steps: BWR Systems at Plant Hatch**

Chemical decontamination of five systems at the Plant Hatch 1 and 2 BWRs, which had operated under hydrogen water chemistry (HWC), was performed using processes that included either an alkaline permanganate (AP) or a nitric permanganate preoxidation (NP) step. Good decontamination factors were achieved, and all corrosion values of exposed coupons were within the expected range for the materials tested. This report describes preoutage planning, project operations, material effects, and lessons learned from the chemical decontamination.

All the corrosion evaluations showed the use of an AP or NP oxidation step introduced no adverse effects on reactor materials and helped to specify appropriate solvent application times and conditions. Average decontamination factors (DFs) achieved were 4.2 for the Hatch 1 FPC system and 15.7 for the Hatch 2 FPC system. DFs of 26.0 and 37.1 were achieved in decontamination of the Hatch 1 RRS A loop and B loop, respectively. A DF of 4.2 was measured following the decontamination of the Hatch 1 RWCU system. The DFs achieved were instrumental in meeting the plant's ALARA goals. In all, more than 200 curies of activity were removed from the five decontaminated systems. No problems were encountered in disposing of the low level waste generated during the decontamination operations.

These results show the NP oxidation step is effective in dissolving the chromium-rich films that form in a BWR operating under HWC. In fact, where an NP oxidation step was applied, higher decontamination factors were achieved. In a separate evaluation, a high decontamination factor of approximately 50 was attained using NP/LOMI to decontaminate the RRS piping at the Brunswick 2 BWR following operation under HWC. EPRI plans to support additional evaluations that will address the effect of preoxidation steps on the corrosion of reactor materials.

*For more information see: EPRI TR-107165, Final Report, December 1996, 162 pages.*

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