

## **N55. CAN-DECON MAKES A STRONG COMEBACK AS CAN-DEREM**

Several years of laboratory study at Atomic Energy of Canada, Limited (AECL) has resulted in the evolution of the CAN-DECON process into the CAN-DEREM process. The new process was applied at Beaver Valley last year, with good results and negligible amounts of corrosion. Three steam generator channel heads at Beaver Valley 1 were decontaminated in September and October 1989 using the CAN-DEREM process. With system volumes of about 12,000 liters for each steam generator, this was the first major application of the CAN-DEREM process, following closely after the successful CAN-DEREM decontamination of a 1,000 liter recirculating heat exchanger at Indian Point 2 in April 1989. The CAN-DECON decontamination process is a dilute regenerative process developed and patented by the AECL in the early 1970s. The original solvent consisted of a mixture of citric acid, oxalic acid, and EDTA.

After the CAN-DECON decontamination of the recirculating water cooling unit system at Peach Bottom 2 in early 1984, a 15-cm (6 in) diameter pipe was removed and a weld was examined for localized corrosion attack. Shallow intergranular attack (IGA) was observed in the weld. This observation led to an experimental study at AECL's Chalk River Nuclear Laboratories to investigate the corrosiveness of mixtures of citric acid, oxalic acid, and EDTA to severely sensitized 304 SS, other reactor materials of construction, and heat-treated Inconel-600.

From the corrosion and decontamination experiments, it was concluded that effective decontaminations of BWR and PWR systems could be achieved with mixtures of citric acid and EDTA, with minimum risk of causing IGA or other localized attack in sensitized 304 SS. As a result of all these successful laboratory studies and demonstrations, the CAN-DEREM process is currently being qualified for use in PWR full heat transport systems in a major program being carried out by Westinghouse in the United States. Westinghouse and PN Services of Richland, Washington now have licenses to apply the CAN-DEREM and CAN-DECON processes.

*For more, see Speranzini, R.A., R. Voit and M. Helms, "CAN-DECON makes a strong comeback as CAN-DEREM," Nuclear Engineering International, pp. 52-55, September 1990.*