

3475. Full System Decontamination of the Indian Point 2 PWR

In March 1995, the first full reactor coolant system chemical decontamination of a U.S. operating nuclear plant was performed at the Indian Point 2 PWR. This demonstration project used a five-step CAN-DEREM™/alkaline permanganate (AP) process to remove deposited activity from all primary system surfaces after first discharging the nuclear fuel from the reactor core. The results exceeded the radiation reduction goal, achieving an average decontamination factor of 7.8 and removing more than 3900 Ci of gamma-emitting radioactive isotopes.

The materials evaluation phase of the program established that the LOMI (low-oxidation-state metal ion), CAN-DEREM™, and AP solvents caused no significant detrimental effects on materials and components used in the primary system of the reactor. The decontamination was performed over a nine-day period during a normal refueling outage. During the decontamination, 3906 Ci of radioactive material and approximately 81.7 lbs (37.1 kg) of iron deposits were dissolved from the surfaces of the Indian Point 2 primary systems. The decontamination stream was processed using conventional ion exchange resin demineralization and filtration; a total of 1770 ft³ (50.1 ma) of resin was used. Subsequent measurements at 55 locations in the plant indicated that radiation fields were reduced by an average of about 87%. Overall, this demonstration established the technical and economic viability of FSD as a means for managing high dose rates.

For more information see: EPRI TR-107039, Final Report, November 1996, 320 pages.

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