

N106. Full System Decontamination Qualification Programs -Comparison Of Fuel In And Fuel Out

Removing the fuel before full system decontamination has the advantage of reducing the quantities of radioactive waste requiring disposal. For example, 130,000 curies of gamma emitters are estimated for the BWR fuel-in case, compared to under 3,000 curies with fuel removed. The difference is less significant in PWRs, where the steam generators are a major reservoir of radioactivity. In fact, only a small increase in resin volumes will be required as a result of including fuel in a PWR decontamination, as the resins are not curie-limited. The main advantages of including the fuel in decontamination are to reduce recontamination rates and the critical time required for the decontamination process, since it would be possible to carry out the decontamination during reactor cool down before the pressure vessel head is removed. It is estimated that 14-15 days will be saved in the PWR case.

For PWRs, the advantages of including the fuel will ultimately outweigh the additional radwaste processing costs, so a program has been initiated by Westinghouse, EPRI, and several utilities to carry out fuel qualification studies at South Carolina Electric and Gas Company's Summer PWR plant. This project involves decontamination of irradiated fuel assemblies removed from the reactor in AP/CAN-DEREM and AP/LOMI, pool-side examination and further examination after re-exposure in the reactor. For BWRs, the large amount of activity on the core is likely to preclude fuel decontamination for purely dose-saving reasons, as two separate fuel-out decontaminations will be more economic.

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