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SCE&G FUEL DECONTAMINATION QUALIFICATION PROGRAM

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Principal Investigator:

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Project Manager:

Objectives: Perform a fuel decontamination qualification program at the V.C. Summer site which will qualify full RCS chemical decontamination with fuel in-place while maintaining existing warranties and incorporating improved fuel technologies.

Comments: At the request of South Carolina Electric and Gas Company, Westinghouse in 1989 developed a program to qualify nuclear fuel for full RCS Decon application. This program involved the chemical decontamination of actual fuel assemblies in a specialized canister in the fuel handling building at the V.C. Summer Nuclear Station with the same dilute chemical solvent parameters as were employed in the Full FCS Qualification Program.

Four fuel assemblies were decontaminated: two using CAN-DEREM and two using LOMI. Approximately 20 curies of Co-58 and Co-60 were removed from each assembly. The four decontaminated assemblies and two control assemblies were reinserted in the V.C. Summer plant for one more cycle with inspections at the next outage.

Remarks/Potential for dose limitation: Preliminary evaluation of the cladding corrosion oxide thickness measurements on the decontaminated and control assemblies indicates that the decontamination treatments have had no adverse affect on the post decontamination cladding corrosion behavior. However, a number of decontamination process application anomalies were observed.

Principal conclusions are:

- The activity level in-core based on prior visual crud deposition and sampling data were underestimated.
- EDTA depletion was observed in the CAN-DEREM reducing step. As a result, the estimated waste volumes for full RCS decon need to be recalculated.
- No detectable quantities of carbon dioxide gas were observed. Thus, CO₂ generation is no longer expected to be a problem for full system decon.
- Full plant fuel-in decontamination should not be limited by fuel cladding corrosion performance.

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References: Miller, R.S., Miller, P.E., and Peffer, D.R., "SCE&G Fuel Decontamination Qualification Program," *Fifth Workshop on Chemical Decontamination*, Electric Power Research Institute, Charlotte, North Carolina, 1993.

Duration: from: 1989 to: 1993

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