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FULL PRIMARY SYSTEM CHEMICAL DECONTAMINATION QUALIFICATION PROGRAM

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Objectives: Determine the technical acceptability of using certain dilute chemical solvent processes for full reactor coolant system (RCS) chemical decontamination. Two processes, CAN-DEREM and LOMI, were selected as candidates to be qualified for use in a PWR.

Comments: The study of the two decontamination methods was divided into seven tasks:

1. Process Qualification Test Program
2. Fluid Systems Evaluation of Decontamination Process Integration With RCS and Auxiliary Systems
3. Engineering Evaluation of RCS Components and Systems
4. Waste Management Methodology and Waste Characteristics
5. Evaluation of Long-Term Benefit of Full RCS Decontamination
6. Preparation of Topical Report and Generic Safety Evaluation
7. Full RCS Decontamination Project Conceptual Design

Additionally, a detailed review was made of previous evaluations and laboratory assessments relevant to the CAN-DEREM and LOMI Decontamination Process in order to identify potential corrosion consequences following a full RCS chemical decontamination.

Remarks/Potential for dose limitation: The only economically feasible way of significantly reducing the source term of a PWR is to chemically decontaminate the entire primary system. As a result of the evaluations performed, it has been demonstrated that full RCS chemical decontamination, using either the CAN-DEREM or LOMI process, can be performed with a high degree of confidence without significant impacts on plant equipment.

References: Miller, P.E., "Full Primary System Chemical Decontamination Qualification Program," *Water Chemistry of Nuclear Reactor Systems 6*, Vol. 1, pp. 89-96, British Nuclear Energy Society, London, 1992.

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