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CANADA

H-180

ONTARIO HYDRO DECONTAMINATION EXPERIENCE

Keywords: CONTAMINATION REMOVAL; FULL SYSTEM DECONTAMINATION; DECONTAMINATION; CAN-DECON; CANDU

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Project Manager:

Objectives: Describe the Candecon process and results obtained from past decontaminations. Discuss some key issues of design and operation that must be addressed to ensure a successful decontamination.

Comments: The essence of Candecon involves the addition of the organic acids, citric acid, oxalic acid, and EDTA, to the heavy water coolant to form a 0.08% solution. These reagents dissolve and complex the corrosion product layer and radioactivity deposited on the heat transport system internal surfaces. The resultant solution is circulated through strong acid cation ion exchange resins in the purification circuit to remove the complexed metals and regenerate the reagents.

The success of decontaminations is dependent not only on the chemistry of the process itself, but also on the reliability of the decontamination purification system. A well designed system together with thorough commissioning are essential.

Training of support staff is a crucial area that cannot be overlooked. Both the needs of operating and chemical advisor staff must be addressed.

Remarks/Potential for dose limitation: Most of the Candecon decontaminations have been applied in support of reactor pressure tube maintenance. For Pickering Unit 3, the radiation dose saved is estimated at 1100 Rem for the decontamination carried out at the time of the reactor retubing outage. However, the savings increase to 4500 Rem when an earlier decontamination in support of continued operation is also considered. For Pickering Unit 4, the savings are estimated at 600 Rem, and 1850 Rem considering an earlier decontamination. For the retubing outages in these two units, maintenance personnel have been able to complete the maintenance substantially within the 2 Rem annual dose limit.

References: Lacy, C.S., "Ontario Hydro Decontamination Experience," *Fifth Workshop on Chemical Decontamination*, pp. 13.1-13.6, Electric Power Research Institute, Charlotte, North Carolina, 1993.

Duration: from: 1975 to: 1993

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