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U.S.A.

R-339

REPLACEMENT OF PINS AND ROLLERS IN IRRADIATED BWR CONTROL BLADES

Keywords: CONTAMINATION REMOVAL; CONTAMINATION PREVENTION; REMOTE SYSTEM; COBALT; CONTROL BLADE; RADIATION FIELD

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Objectives: To design, fabricate, and demonstrate remotely operated equipment that could be used in the spent-fuel pool at BWR sites and would remove the upper pins and rollers in irradiated control blades, replacing them with stainless steel buttons.

Comments: The equipment uses electrical discharge machining (EDM) to remove the upper roller, most of the pin, and a small portion of the control blade. All cut material is collected in a waste container, and fine dust from the EDM operation is collected on a filter. The cut surface is brushed, finished, and inspected. Two stainless steel button halves are remotely riveted together, and their installation is checked with a torque test. The equipment was designed and tested on unirradiated control blades. Modifications were made to accommodate various control blade designs, and the system was then tested at Commonwealth Edison's LaSalle Station.

Remarks/Potential for dose limitation: The equipment was successfully set up and demonstrated at the LaSalle Station. However, work was limited to one wing of one blade due to high dose readings on the filters used to collect radioactive cobalt dust from the EDM operation. These readings would not present a problem if the filters were placed in high-integrity containers. The cobalt-based alloys used in the pins and rollers of BWR control blades are a significant source of the released cobalt that contributes to occupational radiation exposure. Remotely operated equipment permits replacement of the radioactive upper pins and rollers in control blades in the spent-fuel pool.

References: "Replacement of Pins and Rollers in Irradiated BWR Control Blades," EPRI-TR-101837 Vol. 1, Final Report, February 1993.

Duration: from: 1991 to: 1993

Funding: N/A

Status: Completed

Last Update: September 3, 1993