

BNL ALARA Center Data Base

U.S.A.

R-425

FUEL-IN REACTOR COOLANT SYSTEM CHEMICAL DECONTAMINATION PROGRAM

Keywords: CONTAMINATION REMOVAL; DECONTAMINATION; FULL SYSTEM DECONTAMINATION; DECONTAMINATION FACTORS; DOSE; DOSE RATE; DECOMMISSIONING; COST-BENEFIT ANALYSIS

Principal Investigator:

Phillip Miller
Westinghouse Electric Corporation
Nuclear Services Division
P.O. Box 355
Pittsburgh, PA 15230
U.S.A.
Phone: (415) 379-6111

Project Manager:

Christopher Wood
Electric Power Research Institute
3412 Hillview Avenue
Palo Alto, CA 94304
U.S.A.
Phone: (412) 855-2379

Objectives: To prove the viability of a full system chemical decontamination of pressurized water reactors leaving the fuel in place.

The first full RCS chemical decontamination of a US reactor was completed in March 1995. The reactor was Indian Point 2 and the decon took place with the fuel removed. The next logical step is a full RCS decon with the fuel left in.

Research is underway to make this possible.

- Fuel assembly material qualification was successfully completed at the V.C. Summer NPP in 1991 for both current and future generation fuel.
- Cost of Fuel-In decon is the same as without fuel.
- Benefits in exposure savings and outage time savings are greater.

The fuel-in program contains data ownership and royalty provisions. It provides for utilization of Con Edison Engineering and Operations personnel in completing several of the work tasks.

Comments: The fuel-in program is comprised of the following tasks:

1. Fluid systems evaluations
2. NSSS equipment evaluations
3. Waste characterization and management
4. Radiological evaluations
5. Safety evaluations
6. Topical report preparation
7. Topical report defense
8. Process application concerns
9. Project management

Under the current schedule it is planned to submit the final topical report to the NRC by December, 1996. NRC approval is targeted for June 1997.

BNL ALARA Center Data Base

U.S.A.

R-425

Remarks: The study makes a comparison of the costs and benefits of full RCS decon for the fuel-in and fuel-out cases. The following emerge:

For fuel out the effect of the decon lasts for 5 cycles, exposure saved is 1,288 person-rem and critical path time savings are 360 hours. The net savings for this case are \$4M.

For the fuel in case the effect lasts for 10 cycles, exposure savings are 2,018 person-rem and 701 hours of critical path time are saved. The net savings for this case are \$17M.

References: Miller, P.E., "Fuel-In Full RCS Chemical Decontamination Program," Proceedings, EPRI Radiation Field Control and Chemical Decontamination Seminar, Tampa, Florida, November 1995, available from EPRI Distribution Center, P.O. Box 23205, Pleasant Hill, CA 94523, Phone: (501)934-4212.

Duration: from: 1990 to: 1996

Funding: N/A

Status: In progress

Last Update: May 7, 1996