

# BNL ALARA Center Data Base

U.S.A.

R-397

## COBALT SOURCE REDUCTION - CONTROL ROD PIN & ROLLER REPLACEMENT

**Keywords:** COMPONENT RELIABILITY; COBALT REDUCTION; PINS AND ROLLERS; CONTROL ROD

**Principal Investigator:**

Chien Chang Lin  
GE Nuclear Energy  
175 Curtner Ave., M/C VO4  
San Jose, CA 95125  
U.S.A.  
Phone: 510-862-4566

**Project Manager:**

**Objectives:** Describe the General Electric program for replacing the irradiated control rod pins & rollers as a mean of reducing cobalt sources from the reactor core.

**Comments:**

Design:

- No EDM or welding
- Use spacer pads
- Top pins & rollers only
- Minimize implementation time

Process:

- Remove roller with hydraulic punch
- Install posi-lock spacer pad

Design of Spacer Pads:

- Two piece self locking device
- Primary retention: 7/16 inch thread
- Secondary retention: snap ring
- Material: inconel X-750 (same as current rollers)

Attributes of Spacer Pads:

- Positive self-locking device
- Retains pin segments
- Minimizes primary water circulation around pin segments
- Sized to be compatible with standard and GE 10 channels

**Remarks/Potential for dose limitation:**

Advantages:

- Eliminates majority of Co source
- Minimizes risk of damage to CR
- Minimizes risk of pool contamination
- Minimizes amount of waste: no EDM Swarf
- Simple/fast process
- Minimum effect on pool space

# BNL ALARA Center Data Base

U.S.A.

R-397

Status of program:

- BWR 2-4 (D-lattice) spacer pad complete
- Spacer pad qualification testing completed
- Spacer pad safety evaluation complete
- BWR 2-4 (D-lattice) tooling design and qualification complete
- Site demonstration successfully completed at KKM - March 1993
- C-lattice tooling design and qualification in progress
- Initial production at KKM August 1993

**References:** Cearley, J.E., "Cobalt Source Reduction - Control Rod Pin & Roller Replacement," *Radiation Field Control Seminar*, Electric Power Research Institute, Seattle, Washington, 1993.

**Duration:** from: 1992 to: 1993

**Funding:** N/A

**Status:** In progress

**Last Update:** January 3, 1994