

BNL ALARA CENTER

Processes and Practices Related to Occupational Dose

ID: 46

REPLACEMENT OF WORN VALVE OR INTERNAL PARTS WITH LOW-COBALT OR COBALT-FREE ALLOYS**Keywords:** VALVE REPLACEMENTS; CONTAMINATION PREVENTION; MATERIALS OF CONSTRUCTION; COBALT; COBALT-FREE ALLOYS; LOW COBALT ALLOYS; VALVES**Description:**

One of the major sources of cobalt-60 appears to be the cobalt bearing alloys used for hard-faced and wear-resistant materials used in valve internals. Reduction of this major source of cobalt by replacing these internal parts or entire valves with low-cobalt or cobalt free alloys would reduce the build-up of radiation field around primary piping and components. EPRI has been testing replacement valves with several low cobalt or cobalt free alloys at several plants. These tests have shown that in addition to reducing the building of cobalt-60 these new alloys provide improved wear resistance as well as reduced the amount of required valve maintenance.

References and Selected Abstracts:

1. Dufrane, K.F., "Nuclear Components Wear Measurements," EPRI Report NP-2684, October 1982. (Available from Research Reports Center, Box 50490, Palo Alto, CA 94303.)
2. Ocken, H., "Wear Measurements of Nuclear Power Plant Components," EPRI Report NP-3444, May 1984. (Available from Research Reports Center, Box 50490, Palo Alto, CA 94303.)
3. Ocken, H., "Cobalt Release from PWR Valves," EPRI Report NP-3445, July 1984. (Available from Research Reports Center, Box 50490, Palo Alto, CA 94303.)
4. Bergmann, C. A., "BWR Cobalt Source Identification," EPRI Report NP-2263, February 1982. (Available from Research Reports Center, Box 50490, Palo Alto, CA 94303.)
5. Ocken, H., "Evaluation of Cobalt Sources in Westinghouse Design Three and Four Loop Plants." EPRI Report NP-2681, October, 1982. (Available from Research Reports Center, Box 50490, Palo Alto, CA 94303.)
6. Wood, C.J., "Manual of Recent Techniques for LWR Radiation Field Control, EPRI Report NP-4505-SR, March 1986. (Available from Research Reports Center, Box 50490, Palo Alto, CA 94303.)