

BNL ALARA CENTER

Processes and Practices Related to Occupational Dose

ID: 6

CHLORIDE CONCENTRATION CONTROL

Keywords: CHLORIDE CONCENTRATION CONTROL; STRESS CORROSION CRACK; CHLORIDE AND OXYGEN CONCENTRATION INTERRELATIONSHIP; AUSTENITIC STAINLESS STEEL; OPERATIONAL AND CHEMISTRY CONTROL

Description:

For PWR primary water chemistry, chloride-induced stress corrosion crack occurs when austenitic materials are exposed to chloride ions in the presence of oxygen in high-temperature water. The interrelationship between chloride and oxygen concentrations on SCC of austenitic stainless steel has been determined by EPRI. The chloride concentration control parameters in reactor coolant system during cold shutdown, startup, and power operation are prescribed by EPRI. Use of these chemistry guidelines in PWRs will reduce worker dose by reducing stress corrosion cracking and its associated impact on repair.

References and Selected Abstracts:

1. C.J. Wood, "PWR Primary Water Chemistry Guidelines: Revision 1," EPRI Special Report NP-5960-SR, August 1988. Available from Research Reports Center, Box 54090, Palo Alto, CA 94303.

ABSTRACT: The purpose of these guidelines is the development of a standardized chemistry program to ensure fuel and material integrity and control of plant radiation fields. This report, "PWR Primary Water Chemistry Guidelines, Revision 1," presents recommended generic water chemistry specifications, provides a basis for each parameter and limit, suggests responses to degraded water chemistry, and presents chemical analysis methods, outlines data management and surveillance schemes, and discusses the management philosophy required to successfully implement a water chemistry control program.