

BNL ALARA Center Data Base

SWEDEN

R-380

MOVING FROM ULTRA-PURE BWR WATER TO PLANT-TAILORED WATER CHEMISTRY

Keywords: CONTAMINATION PREVENTION; WATER CHEMISTRY;
PRIMARY COOLANT CHEMISTRY; CORROSION; CORROSION CONTROL;
CORROSION PRODUCT; IGSCC; STRESS CORROSION CRACKING;
HYDROGEN WATER CHEMISTRY; OXYGEN CONTENT

Principal Investigator:

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Project Manager:

Objectives: Determine the impact of chemistry on activity build-up and on materials behaviour.

Comments: The experiences in reducing material corrosion in Swedish BWRs by controlling the water chemistry are described. Some of the topics covered include:

- Problem with the behaviour of copper corrosion products in the reactor core
- Combating pipe cracking by adjusting the concentration of dissolved oxygen in the main recirculation water
- Cobalt reduction by controlling the iron-nickel concentration ratio and by zinc addition
- Dealing with sulphate and chloride, which have a strong enhancing effect on IGSCC, in the reactor water
- Hydrogen Water Chemistry
- pH adjustment by addition of alkali metal hydroxides to the reactor water
- Condensate clean-up system related aspects

Remarks/Potential for dose limitation: The water chemistry activities still aim at achieving low radioactive contamination of the reactor systems; control of identified harmful chemical compounds in the process waters; and reduction of radioactive wastes. The way to improvements routes via better information and profound understanding of the fundamental scientific background of operating experiences.

References: Fejes, P. "Moving From Ultra-Pure BWR Water to Plant-Tailored Water Chemistry," *Water Chemistry of Nuclear Reactor Systems 6*, Vol. 2, pp. 90-95, British Nuclear Energy Society, London, 1992.

Duration: from: 1991 to: 1992

Funding: N/A

Status: Completed

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