

## BNL ALARA CENTER

**Processes and Practices Related to Occupational Dose**

ID: 9

**CONDENSATE PREFILTERS**

**Keywords:** CONDENSATE PREFILTERS; CONTAMINATION PREVENTION; FILTERS; POWDERED RESIN FILTERS; FIBER FILTERS; IRON; WASTE

**Description:**

Powdered resin filters have been installed in Japanese BWR condensate cleaning systems to remove crud from the water prior to entering the condensate demineralizers. These are used both initially during start-up and also during normal operations, and are important in maintaining low feed water iron values. The Japanese Tsuruga and Shimane plants have recirculation pip dose rates of 50 mrad/hr after about 5 EFPY, partially due to this improved filtration. Swedish BWRs normally run with 0.5 ppb iron concentration as contrasted to the recent EPRI recommendation of 2 ppb. Part of the justification for the prefilters is based on the dollar cost of reactivity loss (about 1-200,000 per ppb iron). The filters also increase the utilization time of condensate demineralizers permitting backwash or regeneration on loss of ion exchange capacity rather than pressure drop. This reduces radioactive waste generated during backwash of demineralizer resins. Therefore, an important practice to increase iron removal efficiency and thereby reduce shutdown radiation levels is to utilize powdered resin precoated filters upstream from the condensate demineralizers.

**References and Selected Abstracts:**

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