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PWR DOSE REDUCTION MEASURES AT MILLSTONE POINT-2

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Objectives: In 1992, at the end of fuel cycle 11, both Steam Generators (SGs) were replaced at Millstone Point-2(MP2). At that time several chemical and material related dose reduction measures were undertaken, some with the specific intent of taking advantage of the SG replacement itself.

Comments: One major undertaking was the electropolishing of both SG primary side channel heads. After one cycle of operation comparisons between the surface activities of electropolished and mechanically polished surfaces only, showed an overall average improvement by a factor of approximately 2. Other dose reduction measures at MP2 included:

- 1) Electropolishing, chromium plating and passivation of the primary side of the SG manway diaphragms. Preliminary results showed surface activity improvements by factor up to 10. This action was taken under an EPRI-sponsored program.
- 2) The use of low cobalt specification SG tubing in the new SGs.
- 3) A gradual change from Inconel to Zircaloy fuel grid spacers.
- 4) Adoption of a modified elevated pH (to 7.4) coolant chemistry policy for fuel Cycle 12, and future cycles.
- 5) The use of fine absolute filters in the coolant letdown and charging systems.
- 6) Adoption of both a well controlled start up for nickel removal, and a well controlled early boration shutdown procedure.

Remarks: At the end of Cycle 12 SG channel head dose rates at MP2 were the lowest recorded in the history of the station. Radiation field buildup was actually less than half of that of the first cycle after initial start up. Therefore, it can be concluded that SG channel head electropolishing, in conjunction with other dose reduction measures, definitely contributed to the low radiation field witnessed within the SGs at MP2.

References: Hudson, M., "PWR Dose Reduction Measures at Millstone Point-2," Proceedings, EPRI Radiation Field Control and Chemical Decontamination Seminar, Tampa, Florida, November 1995, EPRI Distribution Center, P.O.Box 23205, Pleasant Hill, CA 94532.

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