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R-407

### DEVELOPMENT AND TESTING OF AN ON-LINE IRON PROBE

**Keywords:** PROBES; CORROSION PROTECTION; COMPONENT RELIABILITY; NUCLEAR POWER PLANTS; FOSSIL FUEL POWER PLANTS; IRON

**Principal Investigator:**

Peter Millett Babcock & Wilcox

**Project Manager:**

Electric Power Research Institute  
Nuclear Power Group  
P.O.Box 10412  
Palo Alto, CA 94303  
U.S.A.

**Phone:** (415) 855-2411

**Objectives:** To develop a technique for measuring low ppb levels of iron corrosion particulates on-line at a sampling frequency of five-minute intervals.

**Comments:** The measurement of iron corrosion products is critical in both PWR and BWR systems. Existing measurement techniques provide average iron levels over long sampling intervals. EPRI investigators have developed a new iron probe to allow much more frequent measurement of iron in an on-line configuration with little operator attention. Researchers first performed laboratory tests with the iron probe then field tested it at two BWRs. A PWR test will be performed in the near future before final commercialization of this new technology.

**Potential for dose limitation:** Laboratory testing showed that iron corrosion products could be measured at low ppb levels at a frequency of nearly every five minutes using the iron probe. Using simulated plant corrosion products in the laboratory test program, investigators established the proof of principle. In early field testing at the Clifton Station, iron levels from the probe compared qualitatively well with plant results obtained using standard techniques. In the second field test, the two channels in the iron probe provided consistent results, generally within 20% of each other. The new iron probe offers an alternative that will provide a timely measurement of iron levels with little operator attention. This new technology is now in the commercialization phase.

**References:** EPRI TR-104816, Interim Report, December 1994.

**Duration:** from: 1992 to: 1994

**Funding:** N/A

**Status:** In Progress

**Last Update:** April 26, 1995