

### **N183. More Radiation Monitoring Backfits For The Future**

With almost one half of the world's 400-plus operating nuclear reactors exceeding or approaching ten years old, plant life extension is becoming increasingly important to the industry. This and the continuing need to improve plant safety while keeping operating costs low, will lead plants to opt more and more for radiation monitoring system (RMS) upgrades.

Improving Plant Operations - Included in this upgrade category are plant life extension and license renewal. Upgrading systems for centralized computer control and distributed networks allows for reduced control room clutter, improved information handling, and data prioritization and dissemination. The RMS's PC-based central computer provides operator control and monitoring capability, storage of radiation history data, and sharing of radiation data with central computer system via a data highway, wide-area or local network.

Maintenance - Another driving force behind RMS upgrades is the high cost of maintenance on older electronic systems. Although the existing analog and early digital systems are reliable, periodic maintenance, parts failures, and shelf-life expirations eventually require replacement of system components. The costs of redesigning individual circuits or subsystems as a result of parts obsolescence, along with the necessary documentation and configuration management efforts required by the nuclear industry, can become prohibitive.

Safety and Regulation - Changes in regulatory requirements and policies may also determine when a utility must upgrade its electronic systems. New regulatory guides and nuclear regulations often direct instrumentation changes at operating power plants.

It is not unusual for an older plant with original first-generation RMS electronics to experience frequent problems with those radiation monitors. When the equipment in question is part of the plant's licensing technical specification, problems must be reported to the NRC in the form of license event report (LER). The paperwork to generate LERs is costly and time consuming, and often the internal solution for the plant is to replace the offending monitor. It has also happened that the NRC has directed the power plant to improve the RMS or problem monitor.

Finally, improving plant safety by upgrading RMS instrumentation is one of the means to answer public safety concerns.

*Taken from "More Radiation Monitoring Backfits for the Future," Gerry Kania, Nuclear Engineering International, April 1992, pp. 46-47.*