Consumers Power
POWERING MICHIGAN'S PROGRESS
Palisades Nuclear Plant: 27780 Blue Star Memorial Highway, Covert, MI 49043

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Nuclear Regulatory Commission
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DOCKET 50-255 - LICENSE DPR-20 - PALISADES PLANT - UPGRADES OF SELECTED PLANT INSTRUMENTATION.

The NRC has expressed particular interest in the upgrading of instrumentation where analog equipment is replaced with digital. Since current Palisades planning includes several upgrades of this type, the subject was discussed, during several telephone calls, with the Palisades Project Manager. This letter is intended to provide the NRC staff with details of the analog to digital instrument upgrades planned for our upcoming refueling outage.

During the past several years, Palisades has been faced with the lack of available spare parts, or a lack of familiarity on the part of vendor service employees, for some of the originally installed instrumentation which has been out of production for a considerable time. Replacement equipment of the same general technology is neither always available or desirable. Several pieces of analog instrumentation have been upgraded with digital replacements under the guidance of 10 CFR 50.59. Current plans include continuing upgrade of older equipment.

During the upcoming refueling outage, Palisades plans to replace several older instruments with modern, digital equivalents. The replacement is necessary since spare parts are no longer available for the subject instruments. In addition, the replacement will provide improved "human factors" and easier maintenance for these devices. This replacement is being carried out under the provisions of 10 CFR 50.59.

The following list summarizes the safety related analog-to-digital upgrades projected to be performed during the upcoming 1993 refueling outage.

1) Radiation Monitor replacement (RIA 2316 and 2317)

The existing Refueling Isolation Radiation Monitors are Victoreen Model 846-1 analog ratemeters with Model 847-1 detectors. Their function is to isolate the containment building during refueling operations whenever changes in radiation levels exceed 5 to 10 mr/hr over background. During refueling operations, each monitor is used to actuate one channel of "CHR" containment isolation upon a high background radiation condition. These monitors are switched out of the circuit during normal operation. During normal operation, Containment Isolation, on high radiation, is performed by a 2-out-of-4 arrangement of radiation detectors which have a different setpoint. Manual actuation of each channel of CHR containment isolation is available from the control room.

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RIA 2316 and 2317 are the monitors use to satisfy Technical Specification 3.8.1.c, which is applicable during refueling operations.

These RIAs are being replaced to increase the reliability of the Refueling Isolation System. The existing systems have failed a number of times causing spurious containment isolations (safety system actuations) which result in refueling delays.

The new system will use Victoreen Model 946A digital ratemeters and Model 977 detectors. The micro-processor based portion of the ratemeters are communication, signal conditioning and display oriented. Those in the detector pre-amplifier are for communication to the ratemeter and not associated with any signal processing.

These type of digital radiation monitoring systems have been in use at Palisades in excess of 5 years in various applications. The performance of these instruments has been excellent and has provided a significant increase in reliability over the instruments which they replaced.

2) Auxiliary Feedwater Flow Controllers

There are presently 10 Auxiliary Feedwater Flow Controllers installed at Palisades. In 1988, two of these flow controllers were replaced with YOKOGAWA model SLPC-171-E digital controllers. Their performance history to date has been excellent. During the 1993 refueling outage, six of the remaining instruments will be replaced with similar YOKOGAWA controllers. Although the exact YOKOGAWA controllers installed in 1988 have been superseded, the functional equivalent models SLPC-181-E and SLCD-181-E will be used. The two controllers which are not being replaced are relatively new equipment, installed at the Alternate Shutdown Panel, C-150.

The Auxiliary Feedwater flow controllers being replaced are analog devices, manufactured by Bailey (Models 70113 tracking controllers). Bailey no longer supplies spare parts for these devices. The purchase of qualified spare parts from another vendor would be excessively expensive.

Of the ten installed flow controllers in the Auxiliary Feedwater system, four are "PID" (Proportional, Integral, derivative) controllers (FIC-0727, FIC-0736A, FIC-0737A and FIC-0749) located in the control room, four are Auto/Manual control stations (HIC-0727, HIC-0736A, HIC-0737A and HIC-0749) located at the Hot Shutdown Panel, C-33, and two are simple valve position controls, located at C-150. The primary purpose of the PID flow controllers is to automatically control Auxiliary Feedwater flow to the steam generators at a set rate, (165 GPM) upon receiving an Auxiliary Feedwater Actuation Signal. They are also be used during normal plant startup and shutdown to supply water to the steam generators. The Auto/Manual stations service as backup flow controllers for the PID controllers. The controllers at C-150 (which are not being changed) allow controlling auxiliary feedwater if the control room became unavailable.

These same type of YOKOGAWA PID controllers are used in many non-safety related applications at Palisades including Main Feedwater Controls and Pressurizer Level/Tave Controllers.

3) Process Transmitters

Several original plant supplied Fischer & Porter and Foxboro transmitters are being replaced with Rosemount Smart Model 3051 transmitters. These include various pressure, level and flow transmitters in non-safety related applications. The following lists a few of these applications:

- Condenser Level
- Component Cooling Water Surge Tank Level
- Service Water Pump Outlet Header Pressure
- Auxiliary Feedwater Pump Steam Pressure

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