

# Florida

September 9, 1988 3F0988-06

Document Control Desk U. S. Nuclear Regulatory Commission Washington, D.C. 20555

Subject: Crystal River Unit 3 Docket No. 50-302 Operating License No. DPR-72 Regulatory Guide 1.97 Neutron Flux Monitors NRC Inspection No. 88-27

Dear Sir:

Enclosed is a revision to report dated June 8, 1988 (3F0688-05) concerning the environmental qualification of neutron flux monitors installed to comply with Regulatory Guide 1.97, Revision 3. This report is being revised as a result of concerns expressed by NRC Inspectors during Inspection No. 88-27. The report previously relied on two alternate methods to verify reactivity control, one of which involved components which are not environmentally qualified. The revised report documents that reactivity control can be verified without reliance upon unqualified components in a harsh environment. This report is provided voluntarily.

Also, in response to the inspectors concerns, the EQ Master List is now being controlled as a quality record and is periodically sent to records management.

Should there be any questions, please contact this office.

Sincerely,

Rolf C. Widell, Director Nuclear Operations Site Support

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Regional Administrator, Region II xc: Senior Resident Inspector

PDR

#### VOLUNTARY REPORT

# ENVIRCEMENTAL QUALIFICATION OF RECULATORY GUIDE 1.97 NEUTRON FLUX MONITORS REVISION 1

## PACKGROUND

During the 1985 and 1987 refueling outages at Crystal River Unit 3, additional Neutron Flux Monitors were installed. The monitors were installed to meet regulatory Guide 1.97 requirements for instruments to monitor reactivity control functions following an accident. These monitors, supplied by Gamma-Metrics, were purchased and installed as environmentally qualified to meet the Type B, Category 1 requirements of Regulatory Guide 1.97. Completion of this Regulatory Guide 1.97 requirement was documented in Florida Power Corporation's letter to the NRC (letter number 3F0388-18) dated March 21, 1988.

By letter dated May 10, 1988, Gamma-Metrics informed Florida Power Corporation that the cable assemblies associated with the monitors may leak and cause the monitors to fail under design basis accident conditions. The monitors cannot be considered to meet Regulatory Guide 1.97 Category 1 requirements if the possibility for their failure under accident conditions exists. This condition was documented by a Nonconforming Operations Report at Crystal River Unit 3 on May 20, 1988.

### ANALYSIS

This condition does not significantly compromise plant safety and continued operation without assurance that the Regulatory Guide 1.97 neutron flux monitors will function following an accident is justified as follows.

These neutron flux monitors are installed to provide means for verifying that reactivity control systems have functioned as expected (i.e. subcritical conditions have been reached). They perform no accident prevention or mitigation function. Therefore, failure of these monitors would not increase the probability of an accident occurring, or increase the consequences of an accident if it did occur.

There are alternate means available to determine whether subcritical conditions have been reached. Regulatory Guide 1.97 recognizes Control Rod position and RCS soluble boron concentration is variables which provide information to indicate whether reactive control functions are being accomplished.

FSAR section 7.1.2.2 describes how the reactor protection system (RFS) automatically accomplishes the insertion of the control rods. Once the reactor protection system actuates the circuit breakers which energize the control rod drive system open. The trip signal from the RFS to these breakers remains until manually reset by an operator. The circuit breakers cannot be reclosed until the trip signal is reset. Once the circuit

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breakers are closed and the control rods are re-energized, a complex set of manual control inputs is still necessary before any control rods can be withdrawn. Based upon the described events/actions, it can be seen that once the RPS is actuated, it is not credible to assume that control rods would be withdrawn except as part of a planned start-up.

The Post Accident Sampling System is used to take samples to assure boric acid concentration is maintained. This sampling can be performed under all FSAR postulated accident conditions.

Both the RPS, by automatically inserting the control rods and the Post Accident Sampling System, by providing boron concentration of the RCS, assure that reactivity conditions monitoring are provided.

#### CORRECTIVE ACTIONS

No immediate corrective action is considered necessary. Florida Power Corporation will continue to monitor Gamma-Metrics progress toward resolution of this concern. Modifications to eliminate the possibility of the cable assemblies leaking under accident conditions are anticipated to be made during refuel VII. The control room operators will be informed that these monitors may not be reliable under accident conditions and that alternate means of verifying reactivity control should be considered.