FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT NO. 3

DOCKET NO. 50-302

ECCS EVALUATION REPORT

1.0 General

As requested in the memorandum from G. Mazetis through T. Novak to T. Ippolito, dated April 8, 1976, the EI&CS Branch has reviewed the ECCS of Crystal River, Unit No. 3. The scope of the review was that reflected in the document "General Information Request for Review of ECCS in the Electrical, Instrumentation and Control Areas." The FSAR through Amendment 48 for Crystal River, Unit No. 3, previously prepared safety and supplemental evaluation reports by the EI&CS Branch and other documents listed in the Appendix to this report were used as the basis for our review. The following sections address those items requested to be reviewed in the document "General Information Request for Review of ECCS in the Electrical, Instrumentation and Control Areas."

2.0 ECCS Actuation System Conformance to Single Failure Criterion

We have reviewed the new information since Amendment 42 of the FSAR and re-examined our previous findings documented in the safety and supplemental evaluation reports. We have concluded that our previous findings are still valid and therefore the ECCS Actuation System satisfies the single failure criterion.

3.0 Onsite Emergency Power System Conformance to Single Failure Criterion

We have reviewed the new information since Amendment 42 of the FSAR and re-examined our previous findings documented in the safety and

3.0 supplemental evaluation reports. We have concluded that our previous findings are still valid and therefore the onsite emergency power system satisfies the single failure criterion.

4.0 Environmental Qualification of Electrical Equipment

It has been requested that the Office of Inspection and Enforcement of Region II conduct an audit of the records pertaining to the environmental qualification of Balance of Plant Class IE equipment. The Division of Project Management is currently pursuing the resolution of this matter with the Office of Inspection and Enforcement. The results of the audit will be reported when available.

5.0 Submerged Electrical Equipment

The applicant has identified six valve motors that would be submerged following a LOCA. One of the six valves is not considered to be safety related. The other five valves are part of the Containment Isolation System and are employed to isolate sample lines in the inboard side of the Containment. Although these valves are normally closed, they receive an ESF confirmatory closed signal. The five valves are powered from the same emergency bus. We have reviewed the electrical aspects of the design and determined that a single failure and/or flooding in these five valves would not result in the loss of emergency buses redundancy or the capability to isolate the containment. We have concluded that this is acceptable.

With regard to the non-safety related valve (DWV-164), we could not establish the source power to the valve motor based on the information

5.0 that we presently have. We would consider the power feed for this valve acceptable if it emanates from any bus except those electric buses identified as Train B emergency buses. If this valve is found to be connected to the Train B buses, we will require that the power connections be changed accordingly.

6.0 Critical Single Electrically-Operated Fluid System Components

We have reviewed the new information since Amendment 42 of the FSAR and re-examined our previous findings documented in the safety and supplemental evaluation reports. We have concluded that our findings are still valid with regard to the fact that a failure in any single electrically-operated fluid system component would not result in the loss of capability of the ECCS to perform its safety function.

The core flooding tank isolation valves have been identified as the only valves required by the Technical Specifications to have power disconnected. The electrical aspects of the design for these valves satisfy the Branch Technical Position EI&CSB 18 (Application of the Single Failure Criterion to Manually-Controlled Electrically-Operated Valves) of Appendix 7A of the Standard Review Plan and are acceptable.

7.0 Interlocks Between Redundant Portions of ECCS and Supporting Subsystems

Our review results of the interlocks between redundant portions of the ECCS and supporting subsystems including the power supplies and sources were presented in the safety and supplemental evaluation reports. Our original review of this subject revealed some problem areas which were corrected satisfactorily. We have reviewed the new information submitted since Amendment 42 of the FSAR and have concluded that

7.0 Our previous findings are still valid with regard to the adequacy of the interlock design between redundant portions of safety systems.

8.0 Electrical and Physical Separation Criteria

Our original review of the electrical and physical separation criteria and design conformance with the criteria revealed some problem areas which were corrected satisfactorily as indicated in the safety and supplemental evaluation reports. No additional information has been submitted since Amendment 42 of the FSAR on this subject and therefore our original findings are still valid with regard to the adequacy of the electrical and physical separation.

APPENDIX

The following documents were used as the basis for our ECCS review of Crystal River, Unit No. 3:

1. Final Safety Analysis Report (FSAR) through Amendment 43 for Crystal River, Unit No. 3.

2. Gilbert Associates, Inc. (GAI) Elementary Diagrams for the Engineered Safety Features Actuation System.

3. GAI Elementary and Single Line Diagrams for the Electric Power System and Safety Related Actuation Devices Control Circuits.

4. EICSB Safety Evaluation Report for Crystal River, Unit No. 3, June 6, 1974.

5. EICSB Supplemental Safety Evaluation Report for Crystal River, Unit No. 3, October 18, 1974.

6. FPC's responses (September 19, 1975) to NRC's request for information in July 7, 1975.

7. FPC's responses (January 13, 1976) to NRC's request for information in December 8, 1975.

8. BAW-10103 "ECCS Analysis of B&W's 177 FA Lowered-Loop NSS", June 1975.