

**Florida  
Power**  
CORPORATION

June 2, 1988  
3F0688-03

Mr. James M. Taylor, Director  
Office of Enforcement  
U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D. C. 20555

Subject: Crystal River Unit 3  
Docket No. 50-302  
Operating License No. DP:-72  
Notice of Violation and Proposed Imposition of Civil Penalty  
NRC Inspection Report 87-41  
Enforcement Action 88-34

Dear Sir:

In accordance with 10CFR 2.205, Florida Power Corporation (FPC) provides Attachment I to this letter as the response to the proposed imposition of civil penalty dated May 4, 1988. The answer documents FPC's position that the corrective action strategy utilized for resolving the potential overloaded emergency diesel generator problem was aggressive and resulted in a timely resolution of the issue. It also provides the rationale supporting this position. FPC believes the NRC has failed to give proper credit for FPC's voluntary and comprehensive programs to identify possible deficiencies related to Emergency Diesel Generator loading, including FPC's Configuration Management Program. As a result, FPC requests mitigation of the civil penalty.

The response to the Notice of Violation is provided in Attachment II in accordance with 10CFR 2.201. FPC admits the violation but provides a clarification regarding the corrective action strategy utilized. The response also describes a systematic approach for resolution of potential discrepancies identified by the FPC Configuration Management Program. This approach will allow potential discrepancies identified during this proactive program to be handled in a non-punitive manner. As a result, it provides personnel with an incentive to maintain an aggressive posture in pursuing identification of potential discrepancies and their resolutions. NRC concurrence with this approach is requested.

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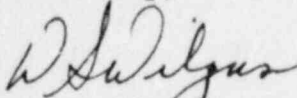
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Mr. James M. Taylor, Director  
Office of Enforcement  
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Should you have any question, please contact this office.

Sincerely,



W. S. Wilgus  
Vice President, Nuclear Operations

WLR:DGG:mag

Atts.

xc: Dr. J. Nelson Grace  
Regional Administrator, Region II

Mr. T. F. Stetka  
Senior Resident Inspector  
Crystal River Unit 3

## ATTACHMENT I

### FLORIDA POWER CORPORATION INSPECTION REPORT 87-41 ENFORCEMENT ACTION EA 88-34

#### ANSWER UNDER 10 CFR 2.205 TO PROPOSED IMPOSITION OF CIVIL PENALTY

#### I. INTRODUCTION

In accordance with 10 CFR 2.205 Florida Power Corporation (FPC) hereby answers the subject Notice of Violation (NOV) and proposed imposition of civil penalty. As explained in Attachment II, FPC accepts the violation with certain clarifications. The purpose of this answer is to address two matters relating to the basis upon which the civil penalty was issued. First, FPC wishes to clarify the description of facts in the NOV. We believe the NRC may have misunderstood the sequence of events and that this has created the incorrect impression that FPC's actions have not been timely or sufficiently aggressive.

Second, FPC believes the NRC has failed to give proper credit for FPC's voluntary and comprehensive programs to identify possible deficiencies related to Emergency Diesel Generator loading, including FPC's Configuration Management Program (CMP). The deficiencies in question were identified as a result of the design control process which is an aspect of configuration management. The NRC's enforcement policy strongly encourages the aggressive identification of deficiencies by the use of such extensive and voluntary programs by licensees. Because the present enforcement action appears to signal a contrary policy, FPC believes reconsideration by the NRC is appropriate.

#### II. CLARIFYING ARGUMENTS

##### A. FPC Promptly Identified and Reported the Deficiencies and Took Prompt and Extensive Corrective Actions

The NOV (at page 2) suggests that FPC did not report the emergency diesel generator (EDG) overloading problem in a timely fashion. The NOV recognizes that FPC reported the matter in October 1987 but states that FPC "had prior opportunity to identify the problem in June 1987." In addition, the NOV appears to credit the NRC's Operational Safety Team Inspection (OSTI) rather than FPC with identification of the conflict between EDG ratings and Technical Specification surveillance requirements. We believe the NOV is inaccurate on these points.

In April 1987 FPC identified a concern with possible overloading of EDG-1A. This concern, which was documented in a Request for Nuclear Engineering Information, related to the possible loading of a pump in a load block different from the design. Although this was considered a comparatively minor deficiency, the NRC was notified. A telephone conference was then held with the NRC on April 24, 1987, during which EDG overloading concerns were discussed. This matter was later reported in LER 87-07 on May 20, 1987.

Thereafter FPC began a very aggressive and detailed review of EDG loading. A detailed EDG loading analysis was completed in June 1987. That analysis showed that calculated FSAR loads were incomplete, resulting in a 3% increase (or non-conservatism) in EDG loads which were considered to have been conservatively estimated (3276 kw versus 3180 kw). The estimated EDG loading, however, still remained within the same design limit (i.e., within the 3001 to 3300 kw rating for less than 30 minutes).<sup>1</sup> At this point, the focus of the analysis was on the completeness of EDG loads and loading sequences. The conflict between the Technical Specification requirements and EDG ratings had not yet been identified.

FPC planned to submit the EDG loading analysis to the NRC as a supplement to LER 87-07 by the end of July 1987. During meetings to discuss the LER supplement in the latter part of July 1987, a concern was identified with the effect of the EDG voltage dip during Block 1 on response time (documented in a Request for Nuclear Engineering Information). FPC decided that this concern needed to be resolved prior to submitting the EDG loading analysis to the NRC. To allow time to resolve the issue, FPC informed the NRC by letter that the analysis would be submitted by the end of October 1987. Meanwhile, FPC's Licensing and Engineering organizations increased the priority of related efforts. Nuclear Engineering assigned a senior engineer to these efforts and also began the process for evaluating the need for increased EDG capacity.

Analysis revealed that even after including the effect of the delay caused by Block 1 voltage dip, no nonconformance had occurred relating to response time. Nevertheless, a modification was installed during the refueling outage then in progress to provide additional margin (Modification Approval Record 87-08-02-01). In addition, a modification was installed to correct the loading concern identified in April 1987 (MAR 87-02-01-01).

In August 1987, during the review of a modification relating to the settings for relays to be installed on the EDG, FPC discovered a conflict between a proposed setpoint (for the trip at EDG output less than 3000 kw) and the values contained in Technical Specification surveillance requirements. As a result, FPC identified that the required 60-minute surveillance test exceeded the 30-minute EDG rating. FPC promptly began a review of the EDG ratings with the vendor. FPC informed the OSTI team about the status of both the EDG loading analysis and the identified conflict between the Technical Specification requirements and EDG ratings. Following research to confirm the Technical Specification error, a nonconformance was formally documented in August 1987 (NCOR 87-131). The related LER (LER 87-19) was submitted on October 8, 1987.

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<sup>1</sup> The Staff later indicated that a more conservative interpretation should be applied -- namely, that operation within the 30-minute rating requires an exemption from GDC-17. FPC submitted an exemption request on December 14, 1987, which also indicated that the EDG calculated load after modification was 3228 kw. This exemption was granted on December 23, 1987.

It is apparent, therefore, that FPC identified the error in the approved Technical Specification and notified the NRC. This matter was discovered as a result of the design review process and promptly reported. Regional management was briefed following the OSTI exit and kept well informed throughout the review of the issue during the ensuing weeks. The Technical Specification surveillance requirement and bases have been revised as necessary. Further, the inspection of the EDG specified by the vendor, has revealed no degradation or out-of-tolerance dimensions. Other corrective actions have been taken as outlined in Attachment II.

It was in October 1987 that FPC discovered the power factor error in the load calculation methodology. At a meeting in September, 1987, the Staff reiterated the position that the EDG test value should envelope the worst case load. FPC had believed this to be the case since the calculated load in 1979 (3180 kw) and the then more recent load (3276 kw) were considered conservative. As FPC attempted to quantify the conservatism remaining following the recalculation of loads, FPC reviewed the fundamental load calculation methodology. During this process, FPC identified the power factor error. At that point, FPC notified the NRC, and this error was reported in LER 87-19-01.

FPC took aggressive action to address the problem. The following modifications were made to reduce loads on EDG-1A:

- 1) automatic tripping of heat tracing,
- 2) automatic tripping of battery chargers, and
- 3) repowering of the turbine driven emergency feedwater pump steam admission valves to reduce the motor driven emergency feedwater pump required flow.

Additionally, procedural changes were implemented to assure that loads on the EDG do not exceed the load at which it was tested.

Furthermore, the EDG accident analysis was redone, and calculations were validated through testing. As a result, the unit restarted after the refueling outage with the EDG accident loading within the 30 minute rating.

The NOV suggests that FPC had an opportunity to identify the Technical Specification error and the power factor error in June 1987. As the above discussion shows, this was not the case. With respect to the Technical Specification error, the Technical Specifications are considered source documents for requirements and are considered to be correct. The Technical Specifications were approved by the NRC prior to licensing, and Standard Technical Specification (NUREG-0103) 3/4.8.1 provided for surveillance testing of the EDG for a minimum of 60 minutes while loaded to at least 100% kw. As indicated in Attachment II, the root causes of the error were incomplete information from the vendor and essentially a mismatch between Standard Technical Specifications and the plant conditions. Additionally, the bases for the surveillance requirement did not indicate whether the 100% kw value was the EDG 100% rating or the total kw of the engineered safeguard loads. These circumstances would not indicate an error or a problem unless coupled with the additional circumstances that occurred later.

With respect to the power factor error, FPC now recognizes that the EDG load testing and analysis method were not fully adequate at the time the Emergency Feedwater Pump (EFP) was loaded to the EDG in 1980. However, the assumption of the 0.8 power factor was consistent with the EDG nameplate ratings and was reflected in the FSAR. Further, the NRC's Safety Evaluation Report for Crystal River 3 (at pages 8-5 and 8-7) stated that the loading of the EDGs was within the limits of the then current NRC guidance in Regulatory Guide 1.9, and that the onsite emergency power system satisfied GDC-17. Again, unless the circumstances come together as they did to indicate a problem there was nothing to prompt a challenge of the validity of the power factor assumption.

In short, while FPC accepts the violation, we do not believe the facts justify the conclusion reached in the NOV (at page 2) that FPC displayed "a less than aggressive corrective action strategy . . . ." It is precisely this kind of situation (the mismatch of Standard Technical Specifications to non-standard plants and the poor integration of plant backfits such as loading the EFP in 1979) that led FPC to implement a voluntary CMP to ferret out possible nonconservatisms or other design deficiencies. FPC agrees that it took several months to fully realize and understand the extent of the problem. The complexity of this problem contributed significantly to the length of time it did take for all the aspects to unfold. FPC approached this problem with a sense of urgency commensurate with the significance of the issues as they unfolded and aggressively implemented activities to resolve the problem. FPC has the utmost concern for the safe operation of the plant and the health and safety of the public. The duration is not an indication to the contrary.

B. Proper Credit Should Be Given to FPC's  
Comprehensive Configuration Management  
Program

FPC believes that the NRC did not give sufficient credit for the voluntary CMP. The NOV states (at page 2): "While you have committed to enhance the CMP, this effort was started at the urgings of the NRC to correct weaknesses in your past performance in design control." Because the NRC's consideration of the CMP has implications for possible future enforcement matters, we feel constrained to address the suggestion that the CMP was somehow untimely or not truly voluntary.

The Commission's enforcement policy states that the NRC attaches great importance to comprehensive licensee programs for detection, correction and reporting of problems that may lead to violations. 10 CFR Part 2, App. C, §V.B. The Commission has further indicated that, under certain circumstances, the Staff should exercise discretion not to take enforcement action if a licensee has developed and is aggressively implementing a comprehensive program for problem identification and correction. Revised Policy Statement, 52 Fed. Reg. 36215, 36217 (September 28, 1987).

FPC believes that a similar policy should be followed in this case. The CMP which was voluntarily implemented by FPC is intended to ensure that design errors are identified and resolved. In addition other concerns were identified as a result of FPC's extensive review of EDG loading and heightened awareness of possible issues with design bases. As a result of programmatic review processes initiated as part of an aspect of configuration management, the initial concern with EDG loading was identified. Such programs for self-identification of problems are strongly encouraged by the enforcement policy.

One of the key elements of the CMP process is to develop a concise set of documents that make up the design/licensing basis of Crystal River Unit 3. In an operation as complex as a nuclear power reactor, it is not unexpected that potential errors or omissions (discrepancies) may be identified during this process. It is FPC's position that, consistent with the Commission's enforcement policy, licensees undertaking such a proactive program should not be penalized for their initiatives. We share a strong commitment with the NRC to move forward in this area. Reconsideration of the basis of the violation should clarify our mutual understanding.

### III. CONCLUSION

For the foregoing reasons, FPC believes the description of facts in the NOV is not entirely accurate and thus fails to recognize the complexity of the problem and surrounding circumstances. Nor does it recognize the aggressive actions to address EDG loading concerns once the problem was identified. Furthermore, FPC believes the NRC should acknowledge and give credit to FPC's voluntary and comprehensive programs to identify possible deficiencies, including the CMP. FPC does not believe it is in the best interests of the health and safety of the public to penalize a licensee as a result of its own initiative toward improved operations and safety. FPC therefore urges the Staff to reconsider the basis for the present violation.

ATTACHMENT II  
FLORIDA POWER CORPORATION  
INSPECTION REPORT 87-41  
ENFORCEMENT ACTION EA 88-34

REPLY UNDER 10 CFR 2.201 TO NOTICE OF VIOLATION

VIOLATION 87-41-01

10 CFR Part 50, Appendix B, Criterion XVI, requires measures be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective materials and equipment, and non-conformances are promptly identified and corrected.

Contrary to the above, from May 1980 until October 1987, the licensee failed to assure that a condition adverse to quality, namely, a potentially overloaded emergency diesel generator (EDG), was promptly identified and corrected. Specifically: (a) the load on EDG/A, for certain design basis events, would have been approximately 3545 kw which is above the manufacturer's published 30-minute rating of 3300 kw; (b) on several occasions, the licensee performed the 18-month surveillance testing of both A and B diesel generators with loads above the 3000 kw rating, and the licensee failed to identify and perform, after each such run, the manufacturer's recommended inspection of certain critical components; and (c) the licensee had not identified that surveillance testing was performed at a maximum of 3100 kw even though the worst case design basis accident load given in the Final Safety Analysis Report is 3180 kw.

This is a Severity Level III violation (Supplement 1)  
Civil Penalty - \$50,000.

RESPONSE

FLORIDA POWER CORPORATION'S POSITION

Florida Power Corporation (FPC) admits the violation as described in parts (a), (b), and (c) above with the following clarification. The corrective action strategy utilized for resolving the potential overloaded EDG problem was considered to be aggressive and resulted in a timely resolution of the issue. The rationale supporting this statement is provided in Attachment I.

APPARENT CAUSE OF VIOLATION

- a. This portion of the violation was caused by an incorrect original analysis method. This method was based on summing the load KVA values of each individual load on the EDG and applying a power factor of 0.8 to the total KVA load value to obtain the load KW (the assumption of the 0.8 power factor was consistent with the EDG nameplate ratings). In reality the load KW should be calculated by first determining the individual load KW values and then summing the individual load KW values to obtain the total KW load on the EDG. The actual overall power factor was calculated to be approximately 0.9. Consequently, summing individual load KW values based on actual power factors produced a larger total EDG KW load than by applying the EDG nameplate power factor of 0.8 to the overall KVA value.



The same incorrect analysis methodology was used in 1980 when a supplemental EDG calculation was performed to include the motor-driven emergency feedwater pump onto the EDG loading. This calculation concluded that the emergency feedwater pump could be added to the EDG with the total load within the 30 minute rating of 3300 KW. Updates of the loading calculation using the correct methodology have yielded a total KW load in excess of the EDG 3300 KW rating.

- b. The cause of this portion of the violation was an apparent misunderstanding (personnel error) of how the EDG ratings should be applied during required surveillance testing. The pre-licensing submittal of this Technical Specification included surveillance testing criteria of 2915 KW which was considered to be 100% of the total engineered safeguards load. This load was within the 2000 hour rating of the EDG. This initial submittal was not acceptable and it was suggested that a 100% (3000 KW) of EDG design rating test be resubmitted. This was subsequently approved by the NRC as part of the original Technical Specification.

The FSAR states the EDG load ratings as follows:

- 1) 2750 KW of 0.8 power factor continuously with an expected maintenance period;
- 2) 3000 KW of 0.8 power factor for 2000 hours and no maintenance;
- 3) 3300 KW at 0.8 power factor for not more than 30 minutes.

The correct application of the EDG ratings, verified by the vendor in September 1987, is to view these KW values as a maximum, for example 1) 2750 KW and less for continuous operation; 2) 3000 KW to 2751 KW for 2000 hours; 3) 3300 KW to 3001 KW for no more than 30 minutes. The vendor also stated that the 30 minute rating was a cumulative limit which should be followed by a special inspection prior to continued operation. This requirement had not been previously considered or implemented. This was due to vendor information (technical manual) being incomplete.

The Technical Specifications are considered to be a source document. Therefore, their design bases are not normally reevaluated on a routine basis and the conflict between the EDG testing criteria and the EDG design rating limit was not identified.

- c. This portion of the violation was caused by an inadequate description in the Standard Technical Specifications and their bases of the EDG load values to be utilized in the surveillance testing criteria. As a result, when the EDG load was increased in 1980, with the addition of the motor-driven emergency feedwater pump, the need for amending the Technical Specification was not identified.

#### CORRECTIVE ACTIONS

- a. The total EDG loading and its design basis were reevaluated. This reevaluation identified certain desirable modification/enhancements which were implemented during Refuel VI. Testing was also performed to validate the EDG load calculation utilized in the reevaluation. As a result, the worst case total EDG load is below 3300 KW for all postulated scenarios.

- b. The special inspection of the upper piston wrist pin bushing by the vendor after exceeding the EDG cumulative 30 minute rating has been completed. No degradation or out-of-tolerance dimensions were noted. The special inspection requirement was incorporated into procedures.

The Technical Specification surveillance requirement and bases have been revised. This surveillance now requires a 60 minute test to be performed. However, 5 minutes of the test are performed in the 30 minute rating at a load greater or equal to the worst case EDG loading condition and the remaining 55 minutes are performed in the 2000 hour rating. This surveillance requirement assures the EDG remains operable.

The EDG ratings will be clarified in Revision 10 of the FSAR.

- c. Technical Specification surveillance requirement 4.8.1.1.2 (D)(4) and its bases have been updated to describe the load values and their origination.

#### DATE OF FULL COMPLIANCE

- a. Full compliance was achieved prior to reaching Mode 1 (January 10, 1988) after Refuel VI, upon completion of the above corrective actions which reduced EDG loads to within acceptable limits.
- b. Full compliance was achieved at the completion of Refuel VI for the corrective actions relative to the EDG special inspection.

The Technical Specification amendment and bases revising the EDG surveillance requirement was issued on February 19, 1988.

The FSAR description of the EDG ratings will be issued on July 1, 1988.

- c. Full compliance was achieved on February 19, 1988, with the issuance of Technical Specification Amendment 105 and Bases.

#### ACTION TAKEN TO PREVENT RECURRENCE

The Configuration Management Program (CMP), which is currently underway at FPC, will review Crystal River Unit 3 design documentation to identify and solve design errors.

One of the key elements of the CMP process is to develop a concise set of documents that make up the design/licensing basis of Crystal River Unit 3. During this effort, it is anticipated that potential errors or omissions (discrepancies) may be identified. Currently, should a potential discrepancy be identified, the operability of the affected system, subsystem, or component and several reporting requirements are brought into question. Additionally, violation/ civil penalties may be issued by the NRC. It is FPC's position the licensees' undertaking such a proactive program should not be penalized for their initiatives.

Therefore, in response to an NRC request, FPC proposes to modify the normal nonconformance controls systems to provide the following systematic approach for potential discrepancies identified by the CMP. This approach would only apply to efforts associated with the resolution of potential discrepancies identified by this process.

1. Potential discrepancies will be clearly identified, prioritized based on safety significance, and periodically provided to appropriate NRC staff (monthly status report or meeting). More timely interface will occur if warranted by the significance of the discrepancy.
2. A plan and schedule for resolution (integrating all items) will be developed, kept current and included in periodic updates.
3. Each potential discrepancy will be evaluated to determine generic implications (both on a plant specific and industry basis). Items of generic interest to the industry will be included in vendor/industry systems as appropriate (e.g., Babcock & Wilcox Preliminary Safety Concerns System or INPO Network).
4. At appropriate milestones, docketed reports will be forwarded to the NRC including information typically associated with Licensee Event Reports and 10 CFR Part 21 reports. This report will include an integrated resolution schedule with appropriate justifications.

The proposed approach is consistent with those used in previous efforts by the NRC. It allows potential discrepancies to be handled in a nonpunitive manner. It also provides FPC personnel with incentive to maintain an aggressive posture in pursuing identification of these potential discrepancies and their resolutions. Therefore, NRC concurrence with the proposed approach is requested.