

## Florida Power

CORPORATION  
Crystal River Unit 3  
Docket No. 50-302

July 3, 1997  
3F0797-33

U.S. Nuclear Regulator Commission  
Attn.: Document Control Desk  
Washington, D. C. 20555-0001

Subject: Florida Power Corporation (FPC) Meeting with the U.S. Nuclear  
Regulatory Commission (NRC) staff on Crystal River Nuclear Plant,  
Unit 3 (CR3) Appendix R issues, June 11, 1997 - Additional  
Information

FPC met with the NRC staff at NRC Headquarters in Rockville on June 11, 1997, and provided a presentation summarizing the status and actions on CR3 Appendix R issues. During this meeting, FPC presented an overview of an Independent Assessment that was conducted on certain portions of CR3's Fire Protection Program. This letter provides additional information on the assessment and Attachment 2 listing the issues and tracking status.

History: During the development of CR3's Thermo-Lag Resolution Program, some discrepancies and inconsistencies were discovered in the CR3 10CFR50 Appendix R Fire Study. These problems were documented on Precursor Cards and entered into the CR3 Corrective Action System for identification, tracking and corrective action. As Thermo-Lag analysis work continued in 1996, more Appendix R inconsistencies were discovered and entered into the Corrective Action System. This increasing trend of Appendix R related Precursor Cards was identified, and Problem Report 96-0401 was issued on September 27, 1996.

This Problem Report questioned the adequacy of documentation and programmatic controls that support the post-fire safe shutdown analysis, and included corrective actions for conducting a comprehensive examination of the post-fire safe shutdown

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analysis and reconfiguring key documentation and administrative controls. An independent assessment was also recommended to obtain impartial confirmation of the Problem Report corrective actions.

The Independent Assessment was set up to obtain a critical/conservative review of CR3 Appendix R documentation and controls including:

- Safe Shutdown Systems and Performance Goals
- Safe Shutdown/Alternative Shutdown Circuits
- Separation Analysis
- Appendix R compliance
- Manual Actions
- Procedures and Repairs

Results: The Independent Assessment was a 10 man-week intensive review of the CR3 post-fire safe shutdown analysis. The assessment confirmed the need for a comprehensive re-evaluation of the post-fire safe shutdown analysis and the need to re-configure key Appendix R documentation and programmatic controls. Specific results from the assessment were provided in five categories summarized below:

*Requirement Issues* (total of 4) - plant features or documentation that deviate from the requirements of Appendix R or other NRC regulatory guidance. It was determined that three of these issues identified concerns with the remote shutdown capability and were reported in LER 96-022. All four have been placed in the Corrective Action System for identification, tracking, and corrective action. They are also covered under the CR3 restart program.

*Commitment Issues* (total of 1) - plant features, analysis, or documentation that are inconsistent with NRC commitments. This issue was placed in the Corrective Action System and is included in the CR3 restart program.

*Indeterminate Compliance Issues* (total of 11) - unavailability of analysis documentation, unanalyzed conditions that could result in a deviation, and professional differences of opinion on interpretations of Appendix R or other NRC regulatory guidance documents. These issues have been placed in the Corrective Action System and are covered under the CR3 restart program. One Indeterminate issue concerning IN 92-18 "POTENTIAL FOR LOSS OF REMOTE SHUTDOWN CAPABILITY DURING A CONTROL ROOM FIRE" is not included in the restart program. FPC's resolution program for this issue will be the subject of a separate NRC submittal in August 1997.

*Enhancement Issues (total of 14)* - plant feature or documentation that is not critical to regulatory compliance but hinders implementation and long-term maintenance of the Appendix R program. These issues have been reviewed and are included in the Precursor System. Some of these issues are covered under the CR3 restart program, some are not applicable, and the remainder will be completed post-restart.

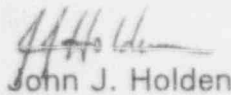
*Draft Phase II Re-analysis Observations (total of 12)* - The Draft Phase II Re-analysis is support documentation for the CR3 Thermo-Lag resolution program. The assessment made observations recommending additional calculations, clarifications, or information to include in this re-analysis. These Observations will be included, as appropriate, in the Thermo-Lag resolution program.

A tabulation of the Requirement, Commitment, Indeterminate, and Enhancement issues is provided in Attachment 2.

It is further noted that the FPC CR3 Quality Assurance (QA) Department has recently completed an audit which included the Fire Protection Program and implementing procedures including the performance of Fire Area inspections. The Audit also addressed the Independent Assessment and the current resolution status. Precursor Card 97-3386 was issued by QA to document recommendations regarding the Independent Assessment. These recommendations are currently under review by management and will be accommodated during the resolution of the Independent Assessment "issues".

Attachment 1 is a listing of commitments made in this letter. If you have any questions regarding this letter, please contact D. F. Kunsemiller Manager, Nuclear Licensing at 352-563-4566.

Sincerely,



John J. Holden

Director Nuclear Engineering & Projects

JJH/ jnb  
Attachment

xc: Regional Administrator, Region II  
Senior Resident Inspector  
NRR Project Manager

### Attachment 1

#### List of Regulatory Commitments

The following table identifies those actions committed to by Florida Power Corporation in this document. Any other actions discussed in the submittal represents intended or planned actions by Florida Power Corporation. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify the Manager, Nuclear Licensing of any questions regarding this document or any associated regulatory commitments.

ID NUMBER	COMMITMENT	COMMITMENT DATE
3F0797-33-1	FPC will resolve the Regulatory, Commitment, Indeterminate, and Enhancement issues identified in the "Independent Assessment of FPC's Appendix R Safe Shutdown Analysis" using current plant corrective action system and restart resolution processes, as indicated in Attachment 2 to 3F0797-33.	Prior to Restart and Post-Restart as indicated in Attachment 2 to 3F0797-33
3F0797-33-2	FPC will incorporate the Observations of the "Independent Assessment of FPC's Appendix R Safe Shutdown Analysis", as appropriate, in the Thermo-Lag resolution program.	Post-Restart

**Attachment 2**  
**SUMMARY STATUS AND TRACKING OF INDEPENDENT ASSESSMENT ISSUES**

Section Number	Independent Assessment Classification	Issue Description	Issue Status	Precursor Card No. and/or Problem Report No.	Restart Resolution Task
3.1.1	Requirement Issue	<u>Emergency Diesel Generator (EDG) Governor Control</u> : A portion of the EDG circuits were not isolated from the control room.	A design review of the Remote Shutdown Capability is on going. This and other discovered isolation problems will be completed prior to restart	PC 96-5253	D-11D
3.1.2	Requirement Issue	<u>Information Notice 85-09 Assessment</u> : Single external hot shorts during a control or cable spreading room fire could cause blown fuses and loss of power to shutdown equipment.	A design review of the Remote Shutdown Capability is on going. This and other discovered isolation problems will be completed prior to restart	PC 96-5252	D-11D
3.1.3	Requirement Issue	<u>Circuit Separation in Remote Shutdown Panel Room (RSP)</u> : A postulated fire in the remote shutdown panel could disable control power fuses and cause loss of control room control of shutdown equipment.	A design review of the Remote Shutdown Capability is on going. This and other discovered isolation problems will be completed prior to restart	PC 96-5252	D-11D
3.1.4	Requirement Issue	<u>Emergency Lighting (EL) in Three Areas</u> : Insufficient Emergency Lighting for 1) monitoring EDGs, 2) verification of MSIV closure, and 3) manual operation of atmospheric dump valves	1) EDG monitoring does not require 8-hour EL, 2) MSIV verification is in the EFIC rooms and 3) ADV operation is on the RSP and both have EL. In addition, EL will be verified during examination of post-fire safe shutdown analysis.	PC 97-0497	D-11 Subtasks 43 & 44 and OP-19A
3.2.1	Commitment Issue	<u>Emergency Lighting in Remote Shutdown Procedure</u> : Reliance on EL in AP-990 "Shutdown From Outside Control Room" inconsistent with regulatory commitments	The one example cited, letdown isolation, is on the RSP and has EL. However procedural reliance on EL will be re-verified during examination of post-fire safe shutdown analysis and verification of procedure AP-990 "Shutdown From Outside Control Room".	PC 97-0497	D-11 Subtasks 43 & 44 and OP-19A
3.3.1	Indeterminate Issue	<u>Fuse/Breaker Coordination</u> : No breaker/fuse coordination study for relay and instrument power and three 480V loads found that were not coordinated.	The three 480V loads have breaker coordination. Relay and instrument power coordination is not referenced in the Fire Study but existing fuse calculations address coordination. Better documentation of breaker coordination is being addressed.	PC 97-0496	D-11 Subtask 37
3.3.2	Indeterminate Issue	<u>Spurious Operation</u> : Inadequate documentation of fire induced spurious signal analysis was available to conduct proper associated circuits assessment.	The original analysis is being re-verified during the examination of the post-fire shutdown analysis. Enhancements to documentation will be provided post-restart.	PC 97-0496	D-11 Subtasks 40 & 41 (Documentation Enhancements are Post-Restart)
3.3.3	Indeterminate Issue	<u>High/Low Pressure Boundary Valves</u> : An analysis of a three phase hot short of power cables on Decay Heat pump suction valves had not been performed	This assessment recommendation confirmed an already identified condition and that the work in progress for DHV-3 and DHV-4 was appropriate.	PC 97-4675 and PR-0401 CAP Items 10 through 14	D-11G



SUMMARY STATUS AND TRACKING OF INDEPENDENT ASSESSMENT ISSUES

Section Number	Independent Assessment Classification	Issue Description	Issue Status	Precursor Card No. and/or Problem Report No.	Restart Resolution Task
3.3.4	Indeterminate Issue	<u>Single Spurious Operation</u> : The single spurious operation methodology used in the Fire Study is insufficiently conservative to meet NRC staff exceptions.	This methodology is consistent with guidance and clarifications of GL 81-12 and GL 86-10 and is in agreement with industry practice.	PC 97-0496	D-11 Subtasks 40 & 41
3.3.5	Indeterminate Issue	<u>External Hot Short</u> : Appendix R analysis did not consider single fire-induced external hot shorts in all areas which is considered non-conservative and not in agreement with GL 86-10.	Hot shorts, open circuits and shorts to ground were considered in the Fire Study and reviewed by NRC. Hot shorts between conductors within a cable were considered in all areas and shorts between cables were considered in congested cable areas.	PC 97-0496	D-11 Subtask 34
3.3.6	Indeterminate Issue	<u>IN 92-18 Assessment</u> : Fire induced hot shorts in DC valves could bypass limit switches as described in IN 92-18	FPC is currently reevaluating this IN 92-18 issue and a submittal to NRC is planned for August '97 that will describe our resolution program.	PC 97-3963	Post-Restart
3.3.7	Indeterminate Issue	<u>Reactor Operation in Solid Mode</u> : Neither the Fire Study nor AP990 provide guidance on 1) reactor coolant system pressure control to assure sub-cooling margin or 2) methods for operating solid or with pressurizer level.	This is addressed in other Appendix R documentation, however, during the evaluation of the post-fire safe shutdown analysis, consolidation of this guidance into the Fire study and/or AP 990 will be evaluated.	PC 97-0496 (related issue PC 96-4534)	D-11 Subtasks 30 & 31
3.3.8	Indeterminate Issue	<u>Decay Heat System Operation</u> : Process monitoring for the Decay Heat removal system is not listed in the Fire Study, hence the thoroughness of the analysis of the decay heat removal function is in question.	The Fire Study describes the use of RCS hot and cold leg wide range instrumentation and decay heat system inlet and outlet temperature is on the RSP as described in the Design Basis Document.	PC 97-0496	D-11 Subtasks 32 & 33
3.3.9	Indeterminate Issue	<u>Borated Water Storage Tank (BWST) Level</u> : The Fire Study does not identify the BWST level as a required component for safe or alternative shutdown	The Fire Study does identify the BWST as a safe shutdown component and the BWST level is on the RSP as described in the Design Basis Document.	PC 97-0496	D-11 Subtasks 32 & 33
3.3.10	Indeterminate Issue	<u>Source Range Monitoring</u> : Following NRC review and resolution on the need for source range monitoring for a reactor building fire, the Fire Study should be updated as appropriate.	Following resolution of this issue the Fire Study will be revised as appropriate.	PC 96-1590	D-11E
3.3.11	Indeterminate Issue	<u>72-Hour Cold Shutdown Capability</u> : The calculation for alternative shutdown to cold shutdown conditions in 72 hours does not include a delay time prior to initiating the cooldown or Decay Heat removal system operation from 280 to 200 degrees.	The calculation for cooling down to 200 degrees is being revised. The new calculation will include the appropriate post fire delay and time to cool from 280 to 200 degrees on decay heat removal.	PC 96-0496 PC 97-1522 PC 97-2360	D-11 Subtasks 30 & 31

**Attachment 2**  
**SUMMARY STATUS AND TRACKING OF INDEPENDENT ASSESSMENT ISSUES**

Section Number	Independent Assessment Classification	Issue Description	Issue Status	Precursor Card No. and/or Problem Report No.	Restart Resolution Task
3.4.1	Enhancement Issue	<u>EDG Load Calculations:</u> Decay Heat Removal Pump is included in the load for EDG "B" and not EDG "A"	This is not a discrepancy and is in agreement with the actual loading of the EDGs in the event of an Appendix R fire.	PC 97-0496	-
3.4.2	Enhancement Issue	<u>Appendix R Documentation:</u> A consolidation of Appendix R documentation and review for consistency and data integrity are recommended.	The Appendix R analysis is currently being reviewed for consistency and data integrity under restart issue D-11. Complete documentation consolidation will be completed post restart.	PC 97-0496	D-11 (Documentation Enhancements are Post-Restart)
3.4.3	Enhancement Issue	<u>Configuration Control of Appendix R Documentation:</u> In order to better assure configuration control it is recommended that Nuclear Engineering Procedure 210 be revised to reference appropriate Appendix R electrical design criteria.	Administrative controls will be updated post-restart.	PC 97-0496	Post-Restart
3.4.4	Enhancement Issue	<u>Cable EGE86 for DGB:</u> Based on the similarity of functions between this cable and EGE85 it is recommended that this cable also be listed in the Fire Study	EGE86 is a spare cable and should not be listed in the Fire Study.	PC 97-0496	-
3.4.5	Enhancement Issue	<u>Appendix R DBD Enhancement:</u> References to IN 85-09 and IN 92-82 should be added to the Appendix R Topical DBD	This will be addressed during Appendix R document consolidation post-restart.	PC 97-0496	Post-Restart
3.4.6	Enhancement Issue	<u>IN 92-82 Assessment:</u> It is recommended that Thermo-Lag be used to eliminate intervening combustibles per IN 92-82.	IN 92-82 guidance was used for evaluating intervening combustibles in the CR3 Thermo-Lag resolution program.	PC 97-0496	-
3.4.7	Enhancement Issue	<u>Exemption Bases:</u> It is recommended that previous Appendix R electrical exemptions be reviewed to assure that exemption-bases remain intact during and following the implementation of new compliance strategies	The previous exemptions have been reviewed and some deletions and modifications have been considered in our planned activities.	PC 97-0496	-
3.4.8	Enhancement Issue	<u>Surveillance of Alternative Shutdown Equipment:</u> The review determined that certain instrumentation was not in Surveillance Procedure SP-338 and recommended that a review of all Alternative Shutdown equipment be conducted and SP-338 be revised accordingly.	The instrumentation noted in the assessment is covered by SP161A and SP-398A. Administrative controls, including surveillance procedures, will be consolidated post-restart.	PC 97-0496	Post-Restart

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Section Number	Independent Assessment Classification	Issue Description	Issue Status	Precursor Card No. and/or Problem Report No.	Restart Resolution Task
3.4.9	Enhancement Issue	<u>Timelines</u> : A timeline study was recommended to assure that sufficient manpower is available to perform the shutdown functions.	If it is determined during revision of AP 990 that a time line is required, one will be provided.	PC 97-0496	OP-19A
3.4.10	Enhancement Issue	<u>Multiple High Impedance Faults</u> : A more rigorous/conservative calculation of multiple impedance faults is recommended to be consistent with GL 86-10	Safe shutdown power sources are correctly evaluated for the effects of multiple high impedance faults, and the existing calculation is consistent with GL 86-10 and industry practice.	PC 97-0496	-
3.4.11	Enhancement Issue	<u>EDG Local Control</u> : Local EDG start and stop capability is recommended in the event that a control room fire causes the air start solenoid valve to remain open.	This potential enhancement will be evaluated during our review of post-fire safe shutdown components.	PC 97-0496	D-11 Subtask 32
3.4.12	Enhancement Issue	<u>Fuse/Breaker Coordination</u> : It is recommended that additional information be included in several breaker coordination calculations	Breaker coordination calculations were conducted in accordance with our nuclear engineering procedures.	PC 97-0496	-
3.4.13	Enhancement Issue	<u>Diagnostics Instrumentation</u> : It is recommended that diagnostic instrumentation for safe and alternative shutdown equipment be identified in the Fire Study.	Diagnostic instrumentation is identified and maintained in the DBD for the Remote Shutdown Panel.	PC 97-0496	-
3.4.14	Enhancement Issue	<u>Instrument Sensing Lines</u> : It is recommended that analysis for separation of redundant instruments be revised to include sensing lines.	A drawing review indicated that appropriate separation exists for the sensing lines. However this will be further evaluated during the post-fire safe shutdown analysis review.	PC 97-0496	D-11 Subtask 32