

**Florida  
Power**  
CORPORATION

March 19, 1981

File: 3-F-2

#3-031-20

Mr. Darrell G. Eisenhut  
Director  
Division of Licensing  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555



Subject: Crystal River Unit 3  
Docket No. 50-302  
Operating License No. DPR-72  
Fire Protection Modifications

- Reference (1) NRC letter dated November 24, 1980, to All Power Reactor Licensees With Plants Licensed Prior to January 1, 1979. (Addressing 10 CFR 50.48 and Appendix R).
- (2) Fire Protection Rule, NRC Generic Letter 81-12, to All Power Reactor Licensees With Plants Licensed Prior to January 1, 1979, Dated February 20, 1981.
- (3) NRC letter from Robert W. Reid to Mr. W. P. Stewart - "Crystal River Unit 3, Fire Protection Safety Evaluation Report," Dated July 27, 1979.
- (4) FPC Letter from Mr. J. A. Hancock to Mr. Robert W. Reid, "Fire Protection Modifications", Dated December 17, 1979.
- (5) FPC Letter from Dr. P. Y. Baynard to Mr. Robert W. Reid, "Fire Protection Modifications, Dated December 6, 1979.

Dear Mr. Eisenhut:

Florida Power Corporation has reviewed those provisions of 10 CFR 50.48 and 10 CFR 50, Appendix R applicable to Crystal River Unit 3.

Based upon FPC's interpretation and evaluation of paragraph 10 CFR 50.48, Appendix R to 10 CFR 50 and CR-3 Fire Protection Safety Evaluation Report (SER) dated July 27, 1979, we submit the following plans and schedule for meeting the intent of Appendix R and for completing the remaining items of the SER.

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## PART I

FIRE PROTECTION MODIFICATION ITEMS PREVIOUSLY APPROVED BY THE NRC STAFF -  
PLANS AND SCHEDULE PER 10 CFR 50.48(d)

<u>SER ITEM</u>	<u>COMPLETION SCHEDULE</u>
A. 3.14 Cable Spreading room floor ceiling for fire barriers	} September 19, 1981 and/or prior to the restart from the 1981 refueling outage.
3.15a, b, c, d & e Automatic fire detection system	
3.17c Cable tray fire stops	

CR-3 projected schedule for the next refueling outage is September 19 - December 12, 1981. These fire protection modifications (approved under the SER) 3.14, 3.15a, b, c, d, e, f and 3.17c will be completed prior to restart from this 1981 refueling outage. This schedule is subject to procuring the materials needed to complete these fire protection modifications.

B. 3.5 Reactor Building standpipe modification	Prior to restart from the 1981 refueling outage following material delivery or outage of sufficient duration.
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SER approved item 3.5 requires Reactor Building standpipe modification. This modification is approximately 30% complete. Delivery of containment isolation valves required for this modification is uncertain due to lack of response from qualified vendors to FPC's proposal. Therefore, completion of this modification prior to restart from the 1981 refueling outage is uncertain.

Exemption Requested:

For the above mentioned reason, FPC hereby requests exemption from the modification completion date delineated in paragraph 10 CFR 50.48(d), and requests an extension for the completion of modification date. If the needed containment isolation valves are not delivered prior to restart from the 1981 refueling outage, this modification will be completed after June 1982, during an outage of sufficient duration or 1983 refueling outage.

PART IIUNRESOLVED SER FIRE PROTECTION MODIFICATION ITEMSNRC STAFF POSITIONSteam Driven Emergency Feedwater Pump, Section 3.18

In the SER, it was our concern that a single, unmitigated fire could affect both the motor driven and the steam driven emergency feedwater pumps. At least one emergency feedwater pump is required for safe shutdown.

By letter dated December 11, 1980, the licensee provided additional information regarding the proposed fire protection modifications for this area.

The licensee indicated that the circuits for the motor driven pump, which are located in the vicinity of the steam driven pump, are encased in conduit and that fire barriers will be installed to keep an exposure fire from impinging directly on the conduit. The conduit will not provide protection in the event of an exposure fire. The licensee has not demonstrated that the proposed fire barriers are adequate to maintain the integrity of the circuits for at least one hour in the event of a fire, and therefore, the modification is not acceptable. The licensee has proposed to build a UL approved one-hour fire barrier between certain motor-operated valves but has not referenced the specific UL design and has not indicated which valves will be protected. The licensee must provide this information for us to complete our evaluation of the adequacy of the barriers.

In addition, the licensee has not provided an automatic suppression system as required by Section III.G of Appendix R to 10 CFR Part 50. This suppression system must be provided to meet Appendix R.

#### FPC RESPONSE

The following response supplements FPC's response provided on December 11, 1980, on SER item 3.18.

The steam driven emergency feed pump is a fire zone bordered by three-hour fire rated walls with open areas to fire Zones 1, 2 and 4. There is one division of safety-related cable trays in this Zone 3. Safety-related cable trays in this zone are from Channel A only. Fire in this zone could possibly yield loss of capability of the turbine driven feed pump or safety-related cabling for Channel A. Loss of functional capability of equipment in the Zone 2 does not affect safe shutdown since redundant capability exists in Zone 2 and/or backup from normal feedwater systems. Since fire within this Zone would only affect one safety division, safe shutdown capability is retained (Refer CR-3 SER, Zone 3).

FPC will provide a one-hour fire wall, as an extension of the existing eight-foot high, six inch thick and 4 feet wide concrete partition, between the steam driven and motor driven emergency feedwater pumps. This new wall will conform to U.L. design #U508. It will protect EFV-14, an isolation discharge valve for the motor driven pump, located in Zone 2 from a postulated fire in Zone 3.

A hose reel station is located in Zone 3 and portable fire extinguishers are located in Zone 2 and Zone 3. Furthermore, the maximum fire severity is two minutes in Zone 2 and eleven minutes in Zone 3. Because of the low fire loading and the danger of "thermal shock" to the steam driven emergency feedwater pump due to inadvertent operation of the sprinkler system, we do not propose to install a wet-pipe fusible link sprinkler system in these zones. Since the fire in this Zone would only affect one safety division, retaining safe shutdown capability, an automatic fire suppression system is not required to meet Section III.G of Appendix R to 10 CFR 50.

#### FPC Schedule

FPC schedule for completion of this modification is six months after NRC approval pursuant to 10 CFR 50.48 (c)(4).

NRC STAFF POSITIONEvaluation and Corrective Action for Fire Consequences in Certain Areas, Sections 3.25, 3.28, 3.29, 3.30, and 3.31.

In the Fire Protection Safety Evaluation Report, we were concerned that a fire could damage redundant safety related equipment and cables necessary to achieve safe shutdown.

By letter dated December 6, 1979, the licensee provided additional information on the electrical circuits and the effects of their loss upon safe shutdown due to an unsuppressed fire. The licensee proposed to install a wet pipe fusible link sprinkler system in the following areas:

1. Auxiliary Building, Elevation 95, Fire Zones 1, 5 and 16.
2. Auxiliary Building, Elevation 119, Fire Zones 1 West End, 7 and 18.

The licensee also proposed to install barriers in the makeup pump rooms, and the wet pipe fusible link water spray system in the intermediate Building at Elevation 119', to protect the cable trays above the personnel airlock shield structure.

Based on our review, we conclude that the proposed modifications are not adequate to provide an acceptable level of fire protection because damage to redundant safety related equipment and cables may result due to thermal lag of the sprinkler system.

The licensee has not demonstrated that adequate protection features have been provided for cables and equipment of redundant systems important to achieving safe shutdown conditions to ensure that at least one means of achieving such conditions survives postulated fires.

To meet our fire protection guidelines, alternate shutdown capability should be provided when safe shutdown cannot be ensured by barriers and detection and suppression systems because of the exposure of redundant safe shutdown equipment, cabling, or components in a single fire area, to an exposure fire, or fire suppression activities, or rupture or inadequate operation of fire suppression systems.

To meet Section III, Paragraph G of the proposed Appendix R to 10 CFR Part 50, the licensee should provide an alternate shutdown capability independent of these areas. The alternate shutdown system should meet the requirements of Paragraph L, Section III of proposed Appendix R to 10 CFR Part 50.

FPC RESPONSESER Items 3.25, 3.27, 3.38, 3.29, and 3.30

Currently, FPC is in the design stages of providing an alternate shutdown panel with cable routing independent or isolated from the cable spreading room and the control room; however, due to the unresolved SER items 3.25 - 3.30 and Section III G.2 and G.3 of Appendix R, FPC will re-evaluate all areas of the plant outside of containment to determine if a single unsuppressed fire can damage redundant safety-related and associated cables or equipment. This extensive effort which

will require approximately 4800 engineering manhours will be completed by November 30, 1981. Should this assessment reveal that postulating a single fire could destroy the functionability of a particular safe shutdown system, (i.e., both A and B trains) the non-safety related systems with similar capabilities will be examined prior to addressing the concern for rerouting any cables or relocating any other equipment. FPC will provide the NRC with the appropriate design and installation schedules by March 30, 1982

### SER Item 3.31

FPC response to item 3.31 was included in the submittal of December 6, 1979, under item 3.25. That response addressed results of an analysis for Zone 1 in the reactor building, demonstrating that redundant safety shutdown systems will not be damaged by an unsuppressed fire. Further, FPC has proposed to install a standpipe system inside the containment building with a suitable number of stations at each elevation in order that all potential fire areas of the containment can be reached by an effective fire stream. (Refer SER item 3.5).

### PART III

#### 10 CFR 50, APPENDIX R, SECTION III.J-EMERGENCY LIGHTING

FPC complies with the intent of this requirement.

### PART IV

#### 10 CFR 50 APPENDIX R, SECTION III-G FIRE-PROTECTION FOR SAFE SHUTDOWN CAPABILITY AND III.L - ALTERNATIVE OR DEDICATED SHUTDOWN CAPABILITY.

### FPC RESPONSE

Pursuant to CR-3 Fire Protection SER item 3.1, on December 17, 1979, FPC submitted additional information concerning the alternate safe shutdown capability modification proposed for Crystal River Unit 3 addressing "Staff Position Safe Shutdown Capability" identified in Enclosure 1 of Reference (2). As stated in the CR-3 Fire Protection SER dated July 27, 1979, the ninety-day (90) response from the NRC was due beginning March 6, 1980. To date, FPC has not received any response concerning the Alternate Safe Shutdown Capability modification. The Enclosure 2 of Reference (2) indicates that additional information concerning associated circuits for Alternative Safe Shutdown Equipment is required for Staff's review.

Pending Staff's response to FPC's December 17, 1979, submittal on Alternate Safe Shutdown Capability modification and based upon the evaluation of the requirements completed to date, it is estimated that a conclusive position and schedule for completion of alternative safe shutdown modification cannot be developed before March 30, 1982. Therefore, pursuant to 10 CFR 50.12(a) with respect to 10 CFR 50, Appendix R, Sections III.G and III.L, FPC requests an exemption from the 30 day response requirement of 10 CFR 50.48(c)(6) until March 30, 1982.

Subsequent planned reviews and evaluations may identify the necessity to petition the Commission for substantive technical exemptions from selected provisions of Sections III.G and III.L as they apply to CR-3, or for an exemption from Sections III.G and III.L in their entirety, pursuant to 10 CFR 50.12. If the Commission will not entertain subsequent exemption requests as a result of

granting the above-requested exemption from the schedular requirements, FPC petitions the Commission for an exemption from the requirements of Section III.G and III.L in their entirety at this time, pursuant to 10 CFR 50.12.

As fully discussed herein, FPC maintains that the above-requested schedular exemption, as authorized by law, will not endanger life or property or the common defense and security, and is in the public interest. Further, FPC asserts that adherence to the schedule currently set forth in 10 CFR 50.48(c)(5) may be detrimental to overall facility safety. Thus, the implementation schedules should be tolled indefinitely pending resolution by the Commission of this request.

FPC noted that the Commission has stated that "the fire protection measures already implemented give reasonable assurance that all operating nuclear plants may continue to operate safely even though the final rule will require additional fire protection measures at many plants." The Commission itself has found that continued operation without the additional actions required by the final rule is not detrimental to public health and safety and thus affords the schedular exemption which seeks only a deferral of a portion of the final rule cannot be contrary to public health and safety.

#### PART V

### 10 CFR 50, APPENDIX R, SECTION III.0, OIL COLLECTION SYSTEM FOR REACTOR COOLANT PUMPS

#### FPC RESPONSE

Pursuant to 10 CFR 50.12(a) and 50.48(c)(6), FPC petition the Commission for an exemption to the requirements of 10 CFR 50, Appendix R, Section III.0 for the Crystal River Unit 3. FPC maintains that such exemption will not endanger life or property or the common defense and security, and is in the public interest. As discussed in 10 CFR 50.48(c)(6), FPC further asserts that the modifications required by Section III.0 would not enhance fire protection safety in its facility, as alternative means to fulfill the stated objective of the Commission had previously been approved by the NRC and implemented by FPC.

The design requirements for the Oil Collection System for the Reactor Coolant Pumps have changed considerably since their original publication in Appendix A to BTP APCS9.5-1, which states that "postulated fires or fire protection system failures need not be considered concurrent with other plant accidents or the most several natural phenomena." Subsequently the Commission augmented its requirements for reasons discussed in the Supplementary Information Section of the regulation as follows:

"Because the failure of the oil collection system from a seismically induced oil fire should not prevent a safety-related system from performing its safety function (Regulatory Guide 1.29, 'Seismic Design Classification,' paragraph C.2), the oil collection system should be designed, engineered, and installed so that its failure will not lead to a fire affecting safety-related equipment as a result of an earthquake."

Clearly, the Commission concern is that a seismic event could cause a rupture of the lube oil system of the RCP, and a fire could result if the flammable fluid was ignited, effecting operability of safety-related equipment required for safe shutdown inside containment. Pre-Appendix R publications of Staff guidance in this regard recognized that alternate and equivalent means of providing protection for this postulated event are viable. Specifically, the following excerpt from the Staff's July 27, 1979, SER demonstrates that:

## (1) In the SER section 5.9.3., Consequences if No Fire Suppression,

"An unmitigated fire involving oil from a reactor coolant pump would most likely result in damage to only one pump due to the oil collection system which limits the amount of oil available to burn to a small amount and because the pumps are widely separated in separate cubicles. The separation of cables is such that a fire in the vicinity of one pump would not cause loss of safe shutdown capability.

"Two areas, elevation 95 feet and elevation 119 feet, both located outside the reactor compartment, contain electrical cabling for trains A and B, and also non-designated cable trays. The licensee has reviewed these areas and find that spread of fire in these areas is limited by separation of major equipments, cable trays and low combustible loading which can serve as fuel. Loss of functional capability of individual components could occur due to a fire, but loss of individual components would not preclude safe shutdown of the plant."

Further, the Staff in SER Section 5.9.6, Modifications, requested the licensee provide "the results of an analysis for Zone 1 which demonstrates that redundant safe shutdown systems will not be damaged by an unsuppressed fire."

In a subsequent letter dated December 6, 1979, from FPC to the Staff responding the above concern, FPC demonstrated that a single, unsuppressed fire will not affect redundant safe shutdown systems or their power, instrumentation or control functions.

In addition, as addressed in SER Section 5.9.6, Modifications, FPC "proposed to install automatic fire detection systems in the vicinity of the Reactor coolant pumps, ventilation units, near cable concentrations, and general areas throughout the reactor building. Fire stops will be provided to maintain separation at the two previously discussed areas on elevation 95 feet and 119 feet. The license has proposed to install a standby system inside the Containment Building with a suitable number of stations at each elevation in order that all potential fire areas of the containment can be reached by an effective fire stream.

Based upon these modifications the Staff concluded in the SER Section 5.9.6, Modifications, that "...the fire protection for the reactor building satisfies objectives .... and is, therefore acceptable."

As addressed in the Amendment No. 23 to CR-3 Operating License DPR-72, in support of Staff finding concerning the CR-3 Fire Protection features, the Nuclear Regulatory Commission has found that:

"The facility will operate in conformity with the licensee's filing the provisions of the Act, and the rules and regulations of the Commission;

"There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

"The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

"The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations, and all applicable requirements have been satisfied."

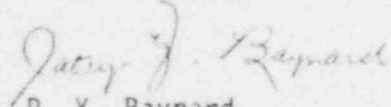
- (2) To further support this position, it is noted that the cumulative costs to comply with this requirement for CR-3 is estimated to be fifteen million (\$15,000,000) including material, installation and replacement power. Seismic qualification of the oil collection system would be beneficial for plant safety only in the event of a simultaneous seismic event and fire in the vicinity of the Reactor Coolant Pumps which have no casual relationship. The probability of a simultaneous Safe Shutdown Earthquake and fire is quite low; the expenditure of \$15,000,000 is clearly not in the public interest.

Therefore, pursuant to 10 CFR 50.12, Florida Power Corporation requests that NRC issue an exemption from the requirements of 10 CFR 50, Appendix R, Section III.0. During the resolution of this petition, FPC request that the implementation schedule associated with this requirement be deferred indefinitely pursuant to 10 CFR 50.48(c)(6).

Should you have any questions regarding our response, please contact Mr. Walter G. Lobo, 813-866-4422.

Very truly yours,

FLORIDA POWER CORPORATION

  
P. Y. Baynard  
Manager  
Nuclear Support Services

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