



# Progress Energy

Crystal River Nuclear Plant  
Docket No. 50-302  
Operating License No. DPR-72

Ref: 10 CFR 50.12

November 26, 2003  
3F1103-07

Attn: Document Control Desk  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Subject: Crystal River Unit 3 – Response to Request for Additional Information Related to  
Crystal River Unit 3 – Revised Appendix R Exemption Request – Fire Area CC-  
164-121

References: 1. Crystal River Unit 3 – Revised Appendix R Exemption Request –  
Fire Area CC-164-121 (Accession No. ML030420412)  
2. Request for Additional Information Related to Crystal River Unit 3 – Revised  
Appendix R Exemption Request – Fire Area CC-164-121 (TAC No. MB7987)  
(Accession No. ML033090003)

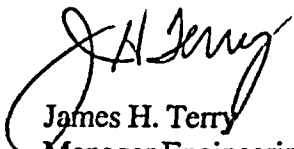
Dear Sir:

Progress Energy Florida, Inc (PEF) hereby responds to Reference 2. Responses to RAIs 1, 2, 4c, and 5 are contained in Attachment A. Responses to RAIs 3, 4a, 4b, 4d, 4e, and 4f will be submitted by December 18, 2003. This has been discussed with the NRC Project Manager for Crystal River – Unit 3.

This letter establishes a new regulatory commitment as documented in Attachment B.

If you have any questions regarding this submittal, please contact Mr. Sid Powell, Supervisor, Licensing and Regulatory Programs at (352) 563-4883.

Sincerely,

  
James H. Terry  
Manager Engineering

JHT/rmb

A006

**Attachments:**

- A. Response to Request for Additional Information Related to Crystal River Unit 3 –  
Revised Appendix R Exemption Request – Fire Area CC-164-121**
- B. List of Regulatory Commitments**

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

**PROGRESS ENERGY FLORIDA**

**CRYSTAL RIVER UNIT 3**

**DOCKET NUMBER 50-302 / LICENSE NUMBER DPR-72**

**ATTACHMENT A**

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION**

**RELATED TO CRYSTAL RIVER UNIT 3 – REVISED APPENDIX R  
EXEMPTION REQUEST - FIRE AREA CC-164-121**

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION  
RELATED TO REVISED APPENDIX R EXEMPTION REQUEST  
FIRE AREA CC-164-121**

**Request 1**

In your exemption request, you stated that the charcoal filter banks, which are the major combustible in the area of concern, will be protected by manually actuated fixed water spray systems with spray heads mounted inside the steel filter housings. You also state that a manually actuated water spray system for the CREVS charcoal filters is consistent with current industry practice and the guidance provided in ASME N509-1989 and Regulatory Guide (RG) 1.52. The NRC staff's position on this issue, as outlined in the relevant parts of RG 1.52 is that when a water-based fire suppression or prevention system is installed in the engineered safety feature atmosphere cleanup system housing, the fire system should be manually actuated unless there is a reasonable probability that the iodine desorption and adsorbent auto-ignition could occur in the housing, in which case the fire system should have both automatic and manual actuation.

Therefore, because you state that the charcoal is "the major combustible in the area," we request that you demonstrate that there is not a reasonable probability that the iodine desorption and adsorbent auto-ignition could occur in the housing. One example of an acceptable way of demonstrating this is to provide the results of your calculations that demonstrate that the highest possible temperature that could occur in the vicinity of the charcoal (including the temperature rise associated with radioactivity-induced heat in the charcoal), as a result of a design-basis accident, is lower than the iodine desorption and adsorbent auto-ignition temperature of the adsorbent.

**Response 1**

The Crystal River – Unit 3 (CR-3) Control Room Emergency Ventilation System (CREVS) filters are not susceptible to adsorbent auto-ignition. Systems generally susceptible to auto-ignition are those with high gaseous activity in the filtered air stream such as systems within reactor containments and stand-by gas treatment systems that process the entire assumed primary containment leakage. The CR-3 systems are not susceptible to iodine desorption and adsorbent auto-ignition resulting from radioactivity-induced heat in the adsorbent because their air streams are not high in gaseous activity. Any activity released from the plant following a design basis accident is diluted in the atmosphere before reaching the control room envelope and then only a small fraction will actually leak into the Control Complex and be removed by the CREVS filters. CR-3 is a neutral pressure design control room and does not have forced make-up flow through the CREVS filters. Additionally, the latest guidance (e.g., Regulatory Guide 1.183) indicates that the predominant form of iodine released from the core is particulate and such activity will be removed by the CREVS particulate filters prior to reaching the charcoal adsorbers.

## Request 2

The local manual actuation is in the fire area containing the filter housings (Justification 2 of 10). Provide an analysis that fire conditions would be contained within the filter housing (i.e., capability to withstand a 1.7-hour ASTM E-119 fire). Describe where within the area the local manual actuation stations are located. State whether the fire brigade has been trained in the operation of these systems in the event that the fire area is filled with smoke.

## Response 2

The local manual actuation is in the same fire area containing the filter housings (Fire Area CC-164-121) but not in the same fire zone. The local manual actuations are in Fire Zone CC-164-121 A and the filter housings are in Fire Zones CC-164-121 B and CC-164-121C. The filter housings were not designed to withstand a 1.7-hour ASTM E-119 fire so such an analysis does not exist. If fire conditions were not contained within the filter housing, conditions that may occur in Fire Area CC-164-121 include heat and toxic atmosphere (e.g., smoke and other products of combustion). As noted below, the Fire Brigade is trained in accessing fire areas and successfully completing operation of equipment in situations like this.

Fire Area CC-164-121 is the Control Complex HVAC area and is divided into four fire zones: CC-164-121A, 121B, 121C, and 121D. The area extends from the 163' 10" elevation to the 186' 10" elevation and is depicted on Reference 1, Attachment Figure 6-2, "Fire Zone Location, Fire Area CC-164-121," page 6 of 6 and included in this Attachment as Figure 6-2. The local manual actuation of the charcoal filter fixed water spray systems would be performed in Fire Zone CC-164-121A along the wall bordering Fire Zone CC-164-121C near the "hash marks." This zone is separated from Fire Zones CC-164-121B and CC-164-121C containing the charcoal filter housings by heavy monolithic concrete construction. Although these walls are not considered rated, such walls have substantial fire resistive capability.

The manual activation of the fixed water spray system would be accomplished by manually opening the currently installed OS&Y control valve and manually pulling the mechanical trip lever on the Automatic Sprinkler Model C deluge valve for the respective filter assembly.

A five person Fire Brigade is prepared to respond to fires in Fire Area CC-164-121 utilizing the guidance contained in AI-2205A, Pre Fire Plan – Control Complex, Enclosure 6. Fire Brigade members are trained in the manual operation of water spray systems (there are six manually operated water spray systems currently protecting various charcoal filters at CR-3). Bunker Gear and SCBAs are donned by Fire Brigade members prior to entering the fire area due to the potential for toxic atmosphere including smoke and other products of combustion. Standard entry procedure would involve two Fire Brigade members entering the room (Fire Area CC-164-121) through Fire Door C-601, following the walls and equipment visually or by feel while in a crouched or crawling position, searching for potential victims and the source of the fire. A second team of two backup Fire Brigade members would remain suited up outside the area if needed. The Pre-Fire Plan

**shows the physical location of the isolation/deluge valves for the charcoal filter water spray systems and also verbally describes where they are located.**

**Request 3**

The charcoal filters are normally isolated by ventilation dampers. State whether these dampers are fire rated. Describe the expected travel path of the smoke and hot gasses in case these ventilation dampers fail during a filter fire. State whether the smoke and hot gasses would interfere with control room ventilation, setting up the Appendix R chilled water system (ARCWS), or the actuation of the manual suppression system.

**Response 3**

**To Be Submitted by December 18, 2003.**

**Request 4a    Appendix R Chilled Water System (ARCWS)**

The revised exemption states in Justification 10, Page 3 of 6, that the time to place the ARCWS in service is less than 90 minutes. Provide the technical basis for the acceptability of 90 minutes without cooling. Describe the temperatures expected in areas containing hot shutdown equipment and whether the hot shutdown equipment in these areas has been analyzed for these temperatures.

**Response 4a**

**To Be Submitted by December 18, 2003.**

**Request 4b    Appendix R Chilled Water System**

Indicate whether the ARCWS has the capability of removing the heat from the affected areas due to the increased heat load from the loss of cooling for 90 minutes. Consider capability while assuming maximum expected ambient temperature conditions.

**Response 4b**

**To Be Submitted by December 18, 2003.**

**Request 4c    Appendix R Chilled Water System**

Describe the actions required to get the ARCWS in service. Also, describe the configuration of the ARCWS. For example, list the chillers, fans, ducting, and whether any tools are required. State whether the minimum operations staff is trained on setting up the ARCWS. Confirm that the minimum shift staff has the capability of setting up the ARCWS simultaneously with fire brigade operations and plant shutdown.

**Response 4c**

**During normal plant operation, the system provides chilled water to the Turbine Building Switchgear Room cooling coils with the equipment in the Control Complex**

isolated. If the system is needed due to a fire that disables the CREVS, the Turbine Building Switchgear Room cooling coils can be isolated with valves in the Turbine Building on EL. 145 ft, and the flow can be directed to the equipment in the Control Complex with valves in the Turbine Building on EL. 119 ft. Alignment of the Appendix R chiller for a fire in this fire area would be performed using AP-990, Shutdown From Outside The Control Room, Enclosure 4. The timed validation for Enclosure 4 is 9.5 minutes to perform and begins approximately 50 minutes from the implementation of AP-990.

The system consists of a chilled water cooling coil, chilled water piping, and local area coolers and fans designed to provide 100% of the cooling for the designated areas. The manual controls and indicators are located in the Turbine Building (EL. 145 ft). The alignment would provide cooling to the following locations using permanently installed plant equipment: 480 volt ES switchgear, 4160 volt ES switchgear, Battery Charging rooms, Inverter rooms, Remote Shutdown room and the EFIC rooms. The configuration of the ARCWS is presented in CR-3 UFSAR Section 9.7.2.1.g.2 and depicted in Figure 9-25. There are no tools required for this evolution.

Our Secondary Plant Operators (SPOs) are qualified to perform this task. The Secondary Plant Operator is our lowest level position on shift which means all operators on shift are also qualified to perform this task.

The staffing requirements for performance of AP-990 have been evaluated. No credit for the two Operations personnel on the Fire Brigade are assumed for any actions associated with AP-990. Our normal operations staffing requirements are based on 2 SPOs, 1 Primary Plant Operator (PPO), 3 Reactor Operators (ROs), 1 Shift Technical Advisor (STA), and 2 Senior Reactor Operators (SROs). All actions associated with our Emergency Operating Procedures and Abnormal Procedures (including AP-990 for plant shutdown and ARCWS operation) are performed with 1 SPO, 1 PPO, 2 ROs, 1 STA, and 2 SROs. Thus, the remaining 1 SPO and 1 RO (and 3 Nuclear Facility Service personnel) are on the Fire Brigade.

**Request 4d**    Appendix R Chilled Water System

During 90 minutes while setting up the ARCWS, establish whether fans and elephant trunk can be used to keep the affected areas at ambient temperature. If so, provide assurance that there are adequate fans to support ventilation of the main control room, cable spreading room, essential switchgear rooms, battery rooms, inverter rooms, and the emergency feedwater initiation and control system rooms, at the same time that fans are required to ventilate the fire-affected area.

**Response 4d**

To Be Submitted by December 18, 2003.

**Request 4e**    Appendix R Chilled Water System

Describe the elevated temperature in the main control room and establish how long the operators would be required to work in an area with elevated temperature.

**Response 4e**

**To Be Submitted by December 18, 2003.**

**Request 4f**    Appendix R Chilled Water System

Describe measures in place to protect operators during extended periods in areas of elevated temperatures.

**Response 4f**

**To Be Submitted by December 18, 2003.**

**Request 5**

The interior walls of rooms 121 B and 121 C have 'hash marks' indicating some sort of opening. Provide a description of this opening.

**Response 5**

The 2'-0" reinforced concrete walls separating Fire Zone CC-164-121A from Fire Zone CC-164-121C and Fire Zone CC-164-121D from Fire Zone CC-164-121B were installed during the construction phase of CR3. This is depicted on Reference 1, Attachment Figure 6-1, "Equipment Arrangement Fire Area CC-164-121," page 5 of 6 and included in this Attachment as Figure 6-1. From field inspection of these walls, it is apparent that the "hash marks" shown on Figure 6-1 are to denote a construction block-out that permitted installation of Fans AHF-18A and AHF-18B after placement of the walls. These block-outs were then filled with reinforced concrete after fan installation.



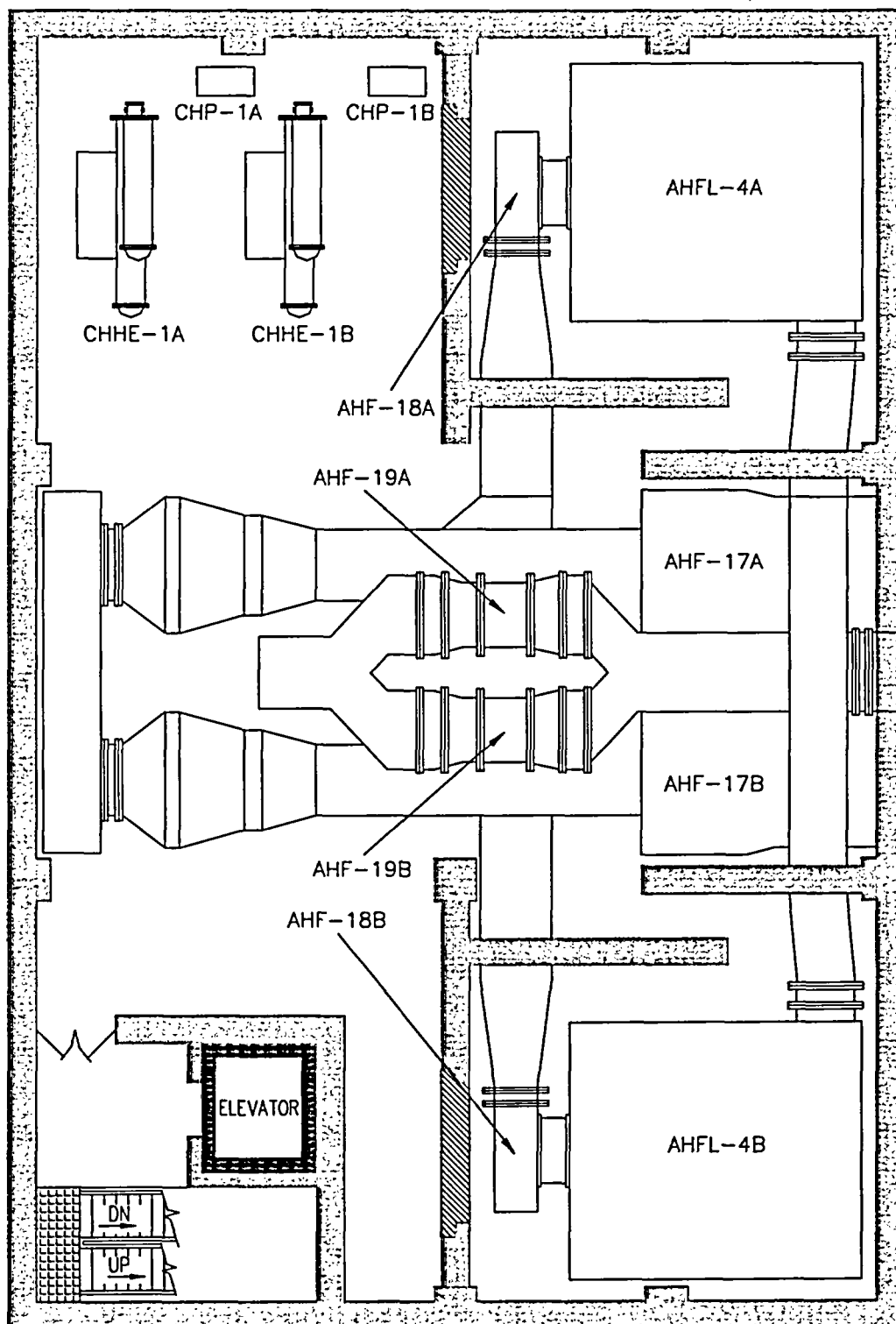


Figure 6-1  
Equipment Arrangement  
Fire Area CC-164-121

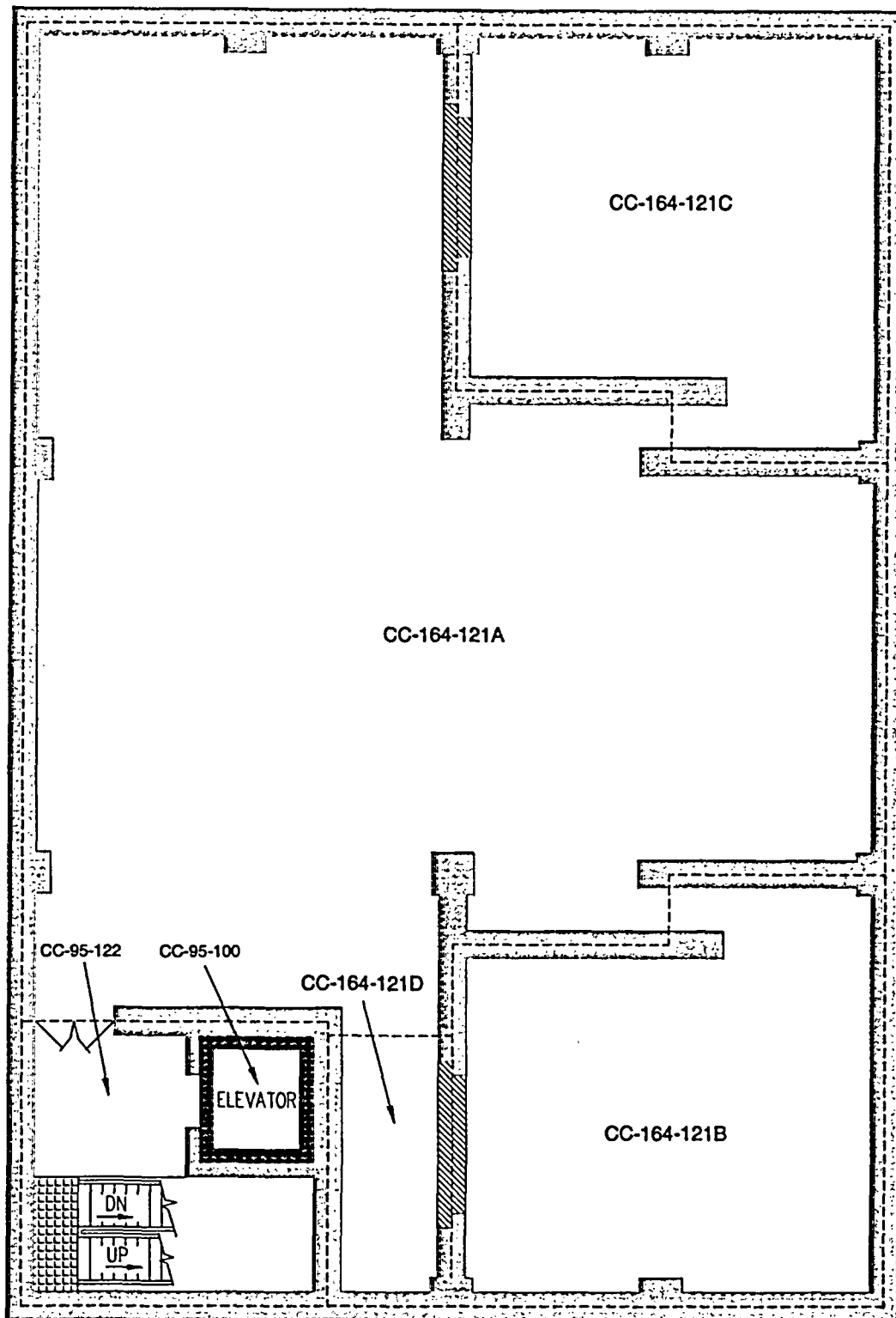


Figure 6-2  
Fire Zone Location  
Fire Area CC-164-121

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**CRYSTAL RIVER UNIT 3**

**DOCKET NUMBER 50-302 / LICENSE NUMBER DPR-72**

**ATTACHMENT B**

**REGULATORY COMMITMENT**

### LIST OF REGULATORY COMMITMENTS

The following table identifies those actions committed to by Progress Energy Florida (PEF) in this document. Any other actions discussed in the submittal represent intended or planned actions by PEF. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify the Supervisor, Licensing and Regulatory Programs of any questions regarding this document or any associated regulatory commitments.

Commitment	Due Date
Progress Energy Florida, Inc (PEF) will submit responses to RAIs 3, 4a, 4b, 4d, 4e, and 4f.	December 18, 2003