Florida Power
A Progress Energy Company

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

Ref: 10 CFR 50, Appendix R

July 17, 2002
3F0702-10

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

50-302

Subject: Crystal River Unit 3 – 10 CFR 50, Appendix R Deviation Request

References:
1. NRC Generic Letter 86-10, "Implementation of Fire Protection Requirements"
2. EPRI Report, *Spurious Actuation of Electrical Circuits Due to Cable Fires: Results for an Expert Elicitation*, EPRI, Palo Alto, CA: 2002. 1006961.

Dear Sir:

Florida Power Corporation (FPC) hereby submits a request for NRC review and approval of a deviation from fire protection guidance associated with concurrent hot shorts of a three-phase power cable and a two-wire control cable. The occurrence of these two hot shorts would cause simultaneous spurious operation of two Decay Heat Removal System suction valves (DHV-3 and -4), which would open a high / low pressure system interface.

The guidance involving Appendix R three-phase hot shorts involving high / low pressure system interfaces is included in Generic Letter 86-10, Enclosure 2, Section 5. FPC did not properly evaluate the cabling for DHV-3 and -4 in the Cable Spreading Room with respect to this requirement.

The existence of this deviation has been entered into the Crystal River Unit 3 (CR-3) corrective action system (NCR-61855). An immediate action was to establish a one-hour fire watch until this issue is resolved.

FPC requests approval of this deviation based on the extremely low probability of occurrence of these two simultaneous hot shorts. The basis for the request is further explained in the attachment to this letter.

This letter establishes no new regulatory commitments.

A006

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, Jr.
Manager, Engineering

Attachment

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

Request for Deviation From Fire Protection Guidance

The power and control cables for DHV-3 and the control cable for DHV-4 run through the Cable Spreading Room. The power for DHV-3 is isolated at its breaker outside the Cable Spreading Room so that the DHV-3 power cable within the Cable Spreading Room is de-energized. The Cable Spreading Room does not contain any electrical cabinets or other ignition sources, no routine work activities are performed, and combustible material is limited to IEEE-383 rated non-combustible cable or equivalent. In addition, the Cable Spreading Room is periodically inspected for transient combustibles.

The CR-3 Fire Hazards Analysis (FHA) addresses the Cable Spreading Room (Fire Area CC-134-118A) as follows:

> **Fire protection systems and equipment:**
>
> Fire detection using cross-zone ionization smoke detectors and automatic fire suppression using a total flooding halon system are provided in Fire Zone 118A.
>
> **Fire development and growth:**
>
> Combustibles - the combustible material in Fire Zone 118A consists exclusively of electrical cables.
>
> Ignition - the electrical cables are qualified to IEEE 383 or equivalent criteria. IEEE 383 or equivalent cables, absent a significant exposure fire, will not support sustained combustion or significant propagation. Thus, the primary concern regarding fire development in this combustible is a fire that produces a significant and sustained exposure to the cables.
>
> Fire growth - should an exposure fire of sufficient magnitude to ignite the cables occur, fire growth would not be rapid. Test data on IEEE 383 or equivalent cables has shown that fire propagation along a cable tray would be less than ten feet per hour.

The scenario for mal-operation is:

1. a fire in the Cable Spreading Room,

2. that causes the three-phase power cable for DHV-3 to be exposed and hot short to an adjacent energized and exposed three-phase cable in the correct sequence (without causing a short to ground) to open DHV-3, and

3. that concurrently causes the control cable for DHV-4 to experience an internal hot short which results in an open signal to DHV-4.

Thus, both Decay Heat Removal System suction valves would open which would pressurize a portion of the low pressure Decay Heat Removal System to Reactor Coolant System pressure.

EPRI Report, *Spurious Actuation of Electrical Circuits Due to Cable Fires: Results for an Expert Elicitation*, EPRI, Palo Alto, CA: 2002. 1006961, evaluated the probabilities of fire-induced spurious actuation of electrical devices due to cable damage. The results of this report will be used in the guidelines being developed by the Nuclear Energy Institute (NEI) on evaluating fire-induced circuit failures (NEI 00-01, Guidance for Post-Fire Safe Shutdown Analysis).

There is a low likelihood of a Cable Spreading Room fire that would, in addition, cause cable damage to the extent of the occurrence of internal and external hot shorts. Thus, the possibility that both Decay Heat Removal System suction valves would open which would pressurize a portion of the low pressure Decay Heat Removal System to Reactor Coolant System pressure is extremely remote.

To eliminate the possibility of these hot shorts, CR-3 would be required to either change plant configuration as it relates to DHV-4 or re-route the DHV-3 power cable so that it does not run through the Cable Spreading Room. The DHV-4 configuration changes would either increase operator dose to operate the valve locally or add steps to the control functions during normal and post-accident operation. These alternatives are considered excessive in comparison to the remote possibility of these hot shorts.

Based on the above information, FPC requests NRC approval of a deviation from the guidance in GL 86-10 in that CR-3 not be required to eliminate the possibility of the internal and external fire-induced, simultaneous hot shorts involving the cables for DHV-3 and DHV-4.