

**Florida
Power**
CORPORATION

May 30, 1984
3F0584-08

Director of Nuclear Reactor Regulation
Attention: Mr. John F. Stolz, Chief
Operating Reactors Branch #4
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
Generic Letter 83-28, Position 4.3
Automatic Actuation of Shunt Trip Attachments

Dear Sir:

The NRC issued Generic Letter 83-28, "Required Actions Based on Generic Implications of Salem ATWS Events", by letter dated July 8, 1983. Florida Power Corporation's (FPC) response for Crystal River Unit 3 (CR-3) was submitted on November 4, 1983.

In our response to Position 4.3, FPC committed to provide automatic actuation of each control rod drive trip breaker's shunt trip attachment using a design based upon the Arkansas Power and Light (AP&L) design. The AP&L design was presented to the NRC as a reference design for B&W utilities. The NRC reviewed the AP&L design and issued a Safety Evaluation Report (SER) on September 12, 1983. Enclosure 1 to the SER listed eight items to be addressed on a plant specific basis. Enclosed is FPC's response to the eight plant specific SER items.

During the December 15, 1983 meeting between the NRC and the B&W Regulatory Response Group, the utilities agreed to review their schedules for installation to assure that this modification would be made at the earliest opportunity. FPC has reviewed the CR-3 schedule and now intends to install this modification, subject to completion of the engineering phase and equipment delivery, during the next outage of sufficient duration following NRC approval. This is a change from the

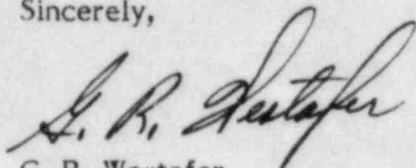
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May 30, 1984
3F0584-08
Page 2

Refuel V installation stated in our November 4, 1983 response. Your prompt review and approval of the CR-3 specific design is requested.

Sincerely,



G. R. Westafer
Manager, Nuclear Operations
Licensing and Fuel Management

DLT/feb

Enclosure

xc: Mr. J. P. O'Reilly (w/encl.)
Regional Administrator, Region II
Office of Inspection & Enforcement
U.S. Nuclear Regulatory Commission
101 Marietta Street N.W., Suite 2900
Atlanta, GA 30303

ENCLOSURE

INFORMATION REQUIRED ON A PLANT SPECIFIC BASIS FOR REVIEW AND STAFF APPROVAL OF MODIFICATIONS TO PROVIDE AUTOMATIC ACTUATION OF REACTOR TRIP BREAKER SHUNT TRIP ATTACHMENTS

Item 1:

A statement confirming that the UV sensor (high speed undervoltage relay) Model ITE-27H-211R, is environmentally and seismically qualified for its service conditions.

Response 1:

The undervoltage sensor, ITE-27H-211RO175, has been environmentally and seismically qualified by Brown Boveri Electric Incorporated to IEEE 323-1974, IEEE 501-1978, and IEEE 344-1975. The sensor is qualified for -20°C to +55°C, 0 to 90% relative humidity (no condensation) and 6g ZPA. These qualifications envelop the service conditions at the sensor mounting location. The ITE-27H-211RO175 is therefore qualified for use in the control rod drive trip breaker shunt trip application at Crystal River 3.

Item 2:

A statement confirming that all other additional components involved in the shunt trip circuits are environmentally and seismically qualified for their service conditions.

Response 2:

The additional equipment used in the control rod drive trip breaker shunt trip application at Crystal River 3 is:

Potter Brumfield Rotary Relay	-	MDR 138-8
Electro Switch	-	Series 20P
Buchanan Terminal Blocks	-	NQB104 & NQB106

Potter Brumfield Rotary Relay MDR 138-8 will be qualified by NU-Therm International Incorporated to IEEE 323-1974, IEEE 501-1978 and IEEE 344-1975. The environmental and seismic test conditions will envelop the service conditions at the relay mounting locations at Crystal River 3.

Electro Switch Series 20P has been qualified by Electro Switch Corporation to IEEE 323-1974 and IEEE 344-1975. The Electro Switch Series 20P is qualified for 80°C (120 hours), 95% relative humidity (96 hours) and 5g ZPA. These qualifications envelop the service conditions at the switch mounting location. The Electro Switch Series 20P is therefore qualified for use in the control rod drive trip breaker shunt trip application at Crystal River 3.

Buchanan terminal blocks NQB 104 and NQB 106 have been qualified by Amerace Corporation to IEEE 323-1974 and IEEE 344-1975. The Buchanan terminal blocks NQB 104 and NQB 106 are qualified for temperatures up to 150°C and 5g ZPA. These qualifications envelop the service conditions at the mounting location. The Buchanan NQB 104 and NQB 106 terminal blocks are therefore qualified for use in the control rod drive trip breaker shunt trip application at Crystal River 3.

Item 3:

A statement confirming that the shunt trip attachment is or will be environmentally and seismically qualified for its service conditions.

Response 3:

The shunt trip attachment will be environmentally and seismically qualified for its service conditions.

Item 4:

Identify the classification (safety related or not) and separation (train or channel identification) for the reactor trip shunt and UV trip circuits, power supplies, and any interface isolation devices.

Response 4:

The control rod drive trip breaker undervoltage (UV) and shunt trip circuits are safety related. Safety related power sources are used to power the undervoltage and shunt trip circuits of the control rod drive trip breakers. Separation of power divisions has been maintained by use of conduit, barriers, and/or separation distances of six inches or more.

Power Division/Channel Assignments are as follows:

<u>Control Rod Drive Trip Breaker</u>	<u>Undervoltage Coil Channel</u>	<u>Shut Trip Coil Channel</u>
AC (Unit 10)	Vital Bus 3A (RPS CH A)*	DC Bus 3A (DPDP 5A)**
AC (Unit 11)	Vital Bus 3B (RPS CH B)	DC Bus 3B (DPDP 5B)
DC (Bkrs 1&2)	Vital Bus 3C (RPS CH C)	DC Bus 3B (DPDP 5B)
DC (Bkrs 3&4)	Vital Bus 3D (RPS CH D)	DC Bus 3A (DPDP 5A)

* RPS - Reactor Protection System

** DPDP - DC System Distribution Panel

The above buses are shown in the Crystal River 3 FSAR Figure 8-8.

The interface between the safety related DC power supply and the non-safety related plant annunciator, loss of DC shunt trip power alarm, is accomplished through the coil to contact isolation of the Potter Brumfield MDR 138-8 relay.

The control rod drive AC trip breakers are equipped with a source interrupt device. The source interrupt device actuates the AC trip breaker shunt trip coil upon overvoltage or undervoltage of the supply bus. This function is to protect the holding coils for the control rod drives and is not considered safety-related.

The non-safety related source interrupt is isolated from the safety related shunt trip circuit through the coil to contact isolation of the Potter Brumfield MDR 138-8 relay.

Item 5:

If the wiring to the UV sensor involves different separation groups (train or channel) identify the minimum separation (distance) between wiring of the different groups. Provide an analysis of the consequences of short circuits between wiring in different separation groups to confirm that the consequences do not adversely impact redundant safety related systems.

Response 5:

The shedule for responding to this Item will be submitted on or before June 22, 1984.

Item 6:

Provide an outline of the test procedures to independently verify the operability of the shunt and UV trip circuits and components. Identify the sequence of actions to be performed. Address your intent regarding periodic surveillance to confirm the operability of the power failure alarms.

Response 6:

The loss of DC shunt trip power alarms will be tested each time the trip circuits are tested.

The schedule for providing an outline of the proposed test procedure sequence to independently verify the operability of the shunt and UV trip circuits will be submitted on or before June 22, 1984.

Item 7:

Provide a draft of any proposed technical specification changes as a result of this modification.

Response 7:

Existing CR-3 Technical Specifications governing operability and surveillance of the Reactor Protection System and control rod drive trip breakers envelop operability and surveillance requirements for the shunt trip. As such, no changes to the existing Technical Specifications are deemed necessary. Appropriate plant procedures will be changed to reflect installation of the shunt trip modification.

Item 8:

Provide the electrical schematics for the shunt and UV trip circuits.

Response 8:

The schedule for providing for electrical schematics for the shunt and UV trip circuits will be submitted on or before June 22, 1984.