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 FACIL:50-261 H. B. Robinson Plant, Unit 2, Carolina Power and Light 05000261  
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 O'REILLY,J.P. Region 2, Atlanta, Office of the Director

SUBJECT: Responds to IE Bulletin 79-27.Electrical sys & components  
 vital to plant safety designed as Class I considered  
 adequate for powering safety & nonsafety-related  
 instrumentation.

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Carolina Power & Light Company

February 28, 1980

FILE: NG-3513 (R)

SERIAL: NO-80-295

Mr. James P. O'Reilly, Director  
U.S. Nuclear Regulatory Commission  
Region II, Suite 3100  
101 Marietta Street  
Atlanta, Georgia 30303

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2  
LICENSE NO DPR-23  
DOCKET NO. 50-261  
RESPONSE TO IE BULLETIN 79-27

Dear Mr. O'Reilly:

In response to IE Bulletin 79-27, Loss of Non Class IE Instrumentation and Control Power System Bus During Operation, the following information is provided relative to H. B. Robinson Unit No. 2.

This was originally brought to our attention by IE Information Notice 79-29 and our investigation confirmed that the concerns related in the Notice did not affect the Robinson Plant. The reason for this conclusion requires a brief description of the Robinson Plant Instrumentation Power System. Basically Robinson Plant has four channels of Instrument Power as shown by the table below:

| <u>Instrument Channels</u> | <u>BUS 1/6</u>          | <u>BUS 2/7</u>          | <u>BUS 3/8</u>          | <u>BUS 4/9</u>          |
|----------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Normal Feeder Source       | MCC-5                   | A Battery               | B Battery               | MCC-6                   |
| Normal Feeder Voltage      | 480VAC                  | 125DC                   | 125DC                   | 480VAC                  |
| Transforming Device        | Transformer             | A Inverter              | B Inverter              | Transformer             |
| Output Voltage             | 120VAC                  | 120VAC                  | 120VAC                  | 120VAC                  |
| Back-up Feeder Source      | MCC-8                   | MCC-8                   | MCC-8                   | MCC-8                   |
| Back-up Feeder Voltage     | 120VAC                  | 120VAC                  | 120VAC                  | 120VAC                  |
| Method of Swap-over        | Manually<br>Interlocked | Manually<br>Interlocked | Manually<br>Interlocked | Manually<br>Interlocked |

It should be noted that MCC-5 and MCC-6 are on the emergency buses as are the chargers for the station batteries.

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1/5/11

The instrumentation is designed into four channels and each channel is powered by its respective Instrument Bus. These instruments feed into the two trains of Reactor Protection and Engineered Safeguards which are powered by DC from the "A" and "B" Station Batteries to the respective trains. The loss of one of the instrument busses should not result in a reactor trip. In the event of a loss of an instrument bus, there remains adequate indication and protection in service from the remaining channels such that the safety of the plant is not jeopardized. From Instrument Status Lights panels on the RTGB, the operator would be aware of which bus was lost and could have it manually switched to its back-up supply.

The four instrument channel status lights are in horizontal rows with each row indicating in a different color corresponding to a different bus. The instrument status lights each indicate the existence of a specific alarm condition for an instrument on the bus. The loss of an Instrument Bus would result in the entire corresponding row of instrument channel status lights for Reactor Protection being illuminated.

There is one exception to this. By design the power to all the status light modules comes from Instrument Bus 1. Therefore, if this bus were to fail, all status lights would go out. In addition, under this condition status light power available lamps would also go out. These indications (or lack of) collectively would provide clear indication to the operator that he had lost Instrument Bus 1.

With this discussion in mind, the following addresses the concerns of this Bulletin:

1. Review the class 1E and non-class 1E buses supplying power to safety and non-safety-related instrumentation and control systems which could affect the ability to achieve a cold shutdown condition using existing procedures or procedures developed under item 2 below.

RESPONSE:

Robinson was designed and constructed prior to the inception of class 1E in electrical equipment. However, all electrical systems and components vital to plant safety are designed as Class I and are considered adequate in all respects to fulfill their design functions of powering all safety and non-safety-related instrumentation.

- a. Identify and review the alarm and/or indications provided in the control room to alert the operator to the loss of power to the bus.

RESPONSE:

The indication provided in the control room to alert the operator to the loss of an Instrument Bus is a panel of Status Lights laid out by instrument channels. This was briefly described above.

- b. Identify the instrument and control system loads connected to the bus and evaluate the effects of loss of power to these loads including the ability to achieve a cold shutdown condition.

RESPONSE:

Also as described above the instrument and control systems are divided into four instrument channels. The loss of any of these channels would reduce the redundancy of instrumentation but would in no way degrade the ability to achieve a cold shutdown condition.

- c. Describe any proposed design modifications resulting from these reviews and evaluations, and your proposed schedule for implementing those modifications.

RESPONSE:

As a result of the Notice investigation and the reviews and evaluations of this Bulletin, no design modifications are considered necessary.

2. Prepare emergency procedures or review existing ones that will be used by control room operators, including procedures required to achieve a cold shutdown condition, upon loss of power to each class 1E and non-class 1E bus supplying power to safety and non-safety-related instrument and control systems.

RESPONSE:

No emergency procedure currently exists that specifically addresses an Instrument Bus. However, procedures (abnormal procedures) do exist which address some of the loss of functions that do result from a loss of instrument power. As discussed above, this event would not affect the ability of Robinson to proceed to a safe cold shutdown condition. Nevertheless, a procedure will be implemented to specifically address this condition. Implementation will be completed before April 30, 1980. A discussion of the requirements of this procedure follows:

- a. The diagnostics/alarms/indicators/symptom resulting from the review and evaluation conducted per item 1 above.

DISCUSSION:

The ability to diagnose the loss of an instrument bus is relatively easy due to the alarms, indicators, and status lights available to the operator. This will be addressed in the procedure.

- b. The use of alternate indication and/or control circuits which may be powered from other non-class 1E and class 1E instrumentation and control buses.

DISCUSSION:

As discussed above, the loss of an instrument bus would not disable the redundant instruments available to the operator. However, certain control systems do provide for alternate circuit use through switching and this will be addressed.

- c. Methods for restoring power to the bus.

DISCUSSION:

The method for restoring power to an instrument bus is to manually switch the feed to a back-up source. This will be included in this procedure.

Describe any proposed design modification or administrative controls to be implemented resulting from these procedures, and your proposed schedule for implementing the changes.

RESPONSE:

No design modifications or additional administration controls, other than the Abnormal Procedure committed in step 2 above, are considered necessary due to the original design of instrument bus redundancy.

- 3. Re-review IE Circular No. 79-02, Failure of 120 Volt Vital AC Power Supplies, dated January 11, 1979, to include both class 1E and non-class 1E safety-related power supply inverters. Based on a review of operating experience and your re-review of IE Circular No. 79-02, describe any proposed design modification or administrative controls to be implemented as a result of the re-review.

RESPONSE:

IE Circular 79-02 was re-reviewed and since the type of equipment related in the circular is not used in Robinson Plant, no proposed design changes or new administration controls are considered necessary.

Operating experience has proven that the design of Vital AC Power Supplies at Robinson Plant are adequate for continued safe and dependable operation and that this design is adequate to satisfy the areas addressed in this Bulletin. Therefore, other than described above, no further action regarding this matter is planned.

Very truly yours,



B. J. Furr

Vice President

Nuclear Operations Department

RSM/CSB/eaj\*

cc: Mr. N. C. Moseley, Jr.