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November 3, 1980

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. NUCLEAR REGULATORY COMMISSION
Washington, D. C. 20555

Attention: Mr. Robert A. Clark, Chief
Operating Reactor Branch #3

Gentlemen:

DOCKET NOS. 50-266 AND 50-301
INSTRUMENT BUS MODIFICATIONS
POINT BEACH NUCLEAR PLANT UNITS 1 AND 2

On May 29, 1980, we sent the NRC a letter describing our proposed modifications to upgrade the instrument bus power supply system at our Point Beach Nuclear Plant. Recently we received, through Mr. Trammell of your staff, several questions from your consultant on this project, EG&G, which requested additional clarification of our proposed modifications. These questions and our responses are provided as follows.

Q.1 R.G.1.6 requires that manual connections between redundant loads should have at least one interlock to prevent an operator from paralleling redundant sources. Describe provisions for preventing parallel operation of the new batteries with each other as well as the old batteries with each other.

A.1 The two breakers to the new DC buses from the new backup battery charger will be interlocked to prevent both of them from being closed at the same time thus preventing paralleling of the two new batteries. A similar interlock will be added to the two existing DC bus breakers connected to the existing backup battery charger.

Q.2 Reg. Guide 1.81 requires that DC systems not be shared between units of the same stations. Justify your modification which shares DC sources between units.

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A.2 It is our opinion that the following points illustrate that the addition of two additional DC systems to be shared between units 1 and 2 is a logical extension of the existing DC system and removes the possibility of simultaneous safety injection in both units. Prevention of simultaneous safety injection caused by a credible accident in one unit, loss of offsite power and failure of one of the inverter powered protection channels in the other unit was the major justification for the upgrade of the instrument bus power supplies.

1. The initial plant DC systems are shared between the two units and plant safety analysis assumes only one of the two systems is available.

2. The two additional DC systems are not intended to upgrade the supply to the existing plant DC loads. They are intended to upgrade supply to the instrument busses which supply protection channels.

3. Our analysis shows that failure of any single element of the two new DC systems can credibly cause the loss of a maximum of a single instrument channel in each unit. Plant protection systems for each unit are designed assuming the loss of a single instrument channel.

Q.3 SRP 8.3.2 and IEEE Standard 308-1974 require monitoring of DC systems to ensure that they are ready to perform their intended functions. Current licensing requires the following indications in the control room. Identify those requirements which your modifications satisfy or provide justification for your design where those requirements are not satisfied.

a. Battery charge/discharge ammeter

b. Battery charger output ammeter

c. DC bus voltmeter

d. Battery charger output voltmeter

e. Battery high discharge rate alarm

f. DC bus undervoltage and overvoltage alarm

g. DC bus ground alarm (if ungrounded system)

h. Battery breaker(s) open alarm

i. Battery charger output breaker(s) open alarm

j. Battery charger trouble alarm (one for a number of abnormal conditions which are usually indicated locally.

A.3 a. Will be provided in control room.

b. Will be provided locally only. The new battery chargers are self limiting to 125% of rated current. Loads in excess of this value will be made up by the associated battery. Battery discharge current indication will be available in the control room. Eventual depression of the battery charger output voltage below nominal levels will be annunciated in the control room as a common battery charger trouble alarm.

c. Will be provided in the control room.

d. Will be provided locally only. Battery charger output voltage for operating chargers will be the same as the DC bus to which it is tied. DC bus voltage is displayed in the control room. Each new battery charger will also be equiped with a common alarm in the control room. One of the conditions alarmed is a charger output over or undervoltage. The values of voltage at which an alarm will occur is adjustable. It is our intention that these be set to alarm values of voltage which are outside normal operating limits, but are well within the limits required by the DC loads being supplied.

e. Will not be provided. The battery will supply load only when the associated DC bus is not being supplied from a battery charger. The control room operator will be aware of this situation and will monitor the discharge of the battery by use of the battery charge/discharge ammeter which will be provided in the control room.

f. Will be provided in the control room.

g. Will be one of the conditions which will cause actuation of the common battery charger alarm which will be provided in the control room for each new battery charger.

h. A common annunciator for both batteries will be provided in the control room. Open/close indication for each battery breaker will also be provided.

i. Will not be provided in the control room. Opening this breaker will cause the common annunciator for the battery charger to alarm.

j. A separate annunciator will be provided in the control room for each new battery charger. The following conditions will cause annunciation.

1) AC power failure

2) Low DC Voltage (adjustable)

3) High DC Voltage (adjustable)

4) DC ground

5) Output breaker open

We trust this information will fully answer your questions as submitted to us. If you have additional questions, please feel free to contact us.

Very truly yours,

C. W. Fay, Director
Nuclear Power Department

Copy to NRC Resident Inspector
Point Beach Nuclear Plant