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October 16, 1981

T. C. NICHOLS, JR.
VICE PRESIDENT AND GROUP EXECUTIVE
NUCLEAR OPERATIONS

Mr. Harold R. Denton
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Subject: Virgil C. Summer Nuclear Station
Docket No. 50/395
Alternate Shutdown System

Dear Mr. Denton:

In response to a telephone conversation with NRC staff members on September 2, 1981, South Carolina Electric and Gas Company provides the following information.

Safe shutdown can be achieved utilizing the Control Room Evacuation Panel (CREP) for postulated fires in the control room, relay room, and the two cable spreading rooms (control complex). As documented in the SCE&G Fire Protection Evaluation, fires outside the control complex do not require operation from CREP.

In the event of a fire requiring utilization of the CREP concurrent with total loss of offsite power, the turbine driven emergency feedwater pump, the corresponding flow control valves and the steam code safety valves are the initial equipment required for maintainance of a Hot Standby condition for at least two hours. The turbine driven emergency feedwater pump and diesels start automatically on a loss of offsite power. An alternate control power supply is not needed since the steam valve for the turbine fails open on loss of power and/or air. The code safety valves are automatic mechanical devices. The flow control valves (IFV 3536-EF, IFV 3546-EF, and IFV 3556-EF) can be controlled from the CREP if control air is available; without air, one man is required to control these valves locally. Steam generator level indicators with circuits and power supplies independent of the control building are available at the CREP (LI 477B, LI 487B, LI 497B). Radio communication is available between the CREP and the valve operating station.

Calculations have shown that reactor coolant system makeup is not needed for more than two hours after a reactor trip and loss of offsite power. However, operating procedure EOP-8 is arranged to ensure the capability for makeup can be established within a short time after the start of the incident. Establishing the capability for makeup requires the following:

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1. Local manual tripping of the switchgear breaker for the offsite source to one of the two main Class 1E buses and

local manual closure of the associated diesel generator breaker.

2. Starting a service water pump using controls at the CREP (these controls have an alternate source of control that is independent of the control complex.)
3. Starting the associated chilled water pump with local manual operation of the switchgear breaker.
4. Starting a chiller from local control switch in the chiller control package and subsequent local manual operation of the switchgear breaker.
5. Starting a charging pump by local manual operation of the switchgear breaker.
6. Provide an initial source of borated water to the charging pump by opening valve XVT 8104-CS and starting boric acid transfer pump XPP 13B-CS. Both the valve and pump can be controlled from the CREP (these controls have a source of control power independent of the control complex). Also, boric acid tank level indication (LI-161 and LI-163 which have power supplies independent of the control complex) are available at the CREP.
7. Pressurizer level indication (LI-459B which has power supply independent of the control complex) is available at the CREP.

The various HVAC systems listed in Attachment I to the Fire Protection Evaluation are needed to ensure the long term reliable operation of the associated process system equipment. Recent preliminary evaluations have shown that HVAC systems are not required for some time after the start of the incident.

The design method for depressurization in the event that shutdown utilizing the CREP is required is the use of the pressurizer power operated relief valves (PORV's). Valves PCV 445 A and PCV 444 B can both be operated from the CREP, have electrical power sources independent of the control complex and have nitrogen accumulators which makes their operation independent of the instrument air system.

The staff questioned whether we rely on making any repairs to equipment as a result of fire rather than provide separation or an alternate system. A fire in the area of the A train RHR pump cooling unit could possibly damage cables for both trains of the cooling unit. A temporary cable is provided therefore to repair the damaged B train cables. Shutdown of the plant under this scenario is from the control room.

The staff requested that this repair be identified on the cold shutdown equipment table (Refer to May 14, 1981 letter to NRC). Since the purpose of this table, was to identify equipment and

circuits necessary for shutdown given a fire anywhere in the plant, we prefer not to complicate the table further with notes such as this. This particular repair is identified in the Fire Protection Evaluation.

The staff requested that documentation of a previously performed test (on the implementation of EOP-8) be provided. The test that was performed was a walk through test and was not properly documented. It was confirmed that the actions could be accomplished in a reasonable time. A more detailed test will be conducted in the upcoming hot functional test.

Testing will be conducted to demonstrate that the plant can be maintained in Hot Standby, and cooled down approximately 50°F from Hot Standby. This testing will document the time to energize the Control Room Evacuation Panel and to implement plant operating procedure EOP-8, "Control Room Evacuation". This testing will also demonstrate the capability to initiate Residual Heat Removal from outside the Control Room by implementing plant operating procedure GOP-8, "Plant Shutdown from Hot Standby to Cold Shutdown with Control Room Inaccessible". Please find attached these two operating procedures (EOP-8 and GOP-8) that will be implemented to accomplish this testing. EOP-8 is in draft form and will be approved in approximately one week. There will be a separate Startup procedure to document the results.

Regarding the staff position that an independent source range monitor be provided at the CREP, it is the position of SCE&G that this is unnecessary because of the increase in shutdown margin before cooldown. An inadvertant boron dilution, considering a loss of offsite power, is an unlikely accident because the available sources of water are borated. The reactor make-up pumps would not supply non-borated water since there is a fail close valve in the flow path.

The only water available for make-up to the Reactor Coolant System (RCS) is borated either from the Boric Acid Tanks, as described in the procedure or from the Refueling Water Storage Tank (RWST). To accommodate for the system leakage by maintaining pressurizer level, make-up as described results in a significant increase in shutdown margin. Additional make-up required to accommodate RCS volume contraction during cooldown using the boric acid storage will insure that the reactor is maintained in a subcritical condition.

We trust that the information provided above will resolve your remaining concerns on our alternate shutdown capability and with the information provided in our letters dated July 16, 1981, and

August 21, 1981, should allow you to close SER open items 1.6.10. If you have any questions, please let us know.

Very truly yours,

T. C. Nichols, Jr.

NEC:TCN:lkb
Attachment
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