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RECIP.NAME RECIPIENT AFFILIATION
DENTON,H.R. Office of Nuclear Reactor Regulation, Director

SUBJECT: Forwards responses to draft SER Open Items 51,52 & 215 re ECCS supports & intermediate steam line breaks w/loss of offsite power.

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CP&L

Carolina Power & Light Company

SERIAL: LAP-83-97

APR 08 1983

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington, DC 20555

SHEARON HARRIS NUCLEAR POWER PLANT
UNIT NOS. 1 AND 2
DOCKET NOS. 50-400 AND 50-401
DRAFT SAFETY EVALUATION REPORT RESPONSES
REACTOR SYSTEMS BRANCH

Dear Mr. Denton:

Carolina Power & Light Company (CP&L) hereby transmits one original and forty copies of responses to Shearon Harris Nuclear Power Plant Draft Safety Evaluation Report Open Items. These responses are for the Reactor Systems Branch, and are CP&L Open Item Nos. 51, 52, and 215.

We will be providing responses to other Open Items in the Draft Safety Evaluation Report shortly.

Yours very truly,

M. A. McDuffie
Senior Vice President
Engineering & Construction

JDK/pgp (6503JDK)

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OPEN ITEM 51

Provide a list of components required for operation and support of the ECCS and discuss methods to prevent hotleg injection during ECCS coldleg injection (Question 440.38). (Section 6.3.2)

Question

440.38 (Section 6.3) Provide a list of all active components which are required for operation and support of the ECCS. Provide safety and seismic classification for each component and indicate what services such as cooling, lube oil and air are necessary for the proper functioning of each component. Also show the associated train for this service.

Response

The primary auxiliary systems required to support the ECCS are as follows:

1. The engineered safety features (ESF) electrical buses; to provide electric power to the ECCS pumps and motor operated valves. If offsite power is available, loading of the emergency diesel generators onto the ESF buses is not required (see Section 8.3.1).
2. The component cooling water system; to provide cooling to the RHR pumps and RHR heat exchangers (in recirculation mode only). The standby component cooling water pump is started by the "S" signal. Flow to the RHR heat exchangers is initiated by the operator prior to the switch to recirculation.
3. The chilled water system (see Section 9.2.8) to provide cooling water to the ECCS pump room cooling system air handling units. The standby chiller and standby chilled water pump are started by the "S" signal.
4. The service water system (see Section 9.2.1) to provide bearing and gear oil cooling for the charging pumps.

Secondary auxiliary systems required to directly support the primary auxiliary systems listed above:

1. The emergency diesel generators (see Section 8.3.1); to provide electric power to the ESF buses in the event of loss of offsite power. The emergency diesel generators are started upon receipt of an undervoltage signal from the associated bus or upon receipt of the "S" signal. Supporting systems for operation of the emergency diesel generators and methods for actuation of these systems are as follows:

a. Diesel generator fuel oil storage and transfer system; started by a low level signal from the day tank. (See Section 9.5.4).

b. Diesel generator cooling water system; cooling water is supplied by operation of the associated service water system cooling loop. (See Section 9.5.5).

c. Diesel generator starting system; started by the "S" signal. (See Section 9.5.6).

d. Diesel generator lubrication system; components are engine driven. (See Section 9.5.7).

e. Diesel generator combustion air intake and exhaust system; system is passive and includes no operating components. (See Section 9.5.8).

f. Diesel generator building ventilation system; fans start when diesel generators start.

2. The service water system; to supply cooling water to the following:

a. Component cooling heat exchangers.
b. Diesel generator starting system air compressor aftercoolers.
c. Diesel generator lubrication system oil coolers.
d. Chilled water system water chiller condensers.

The emergency service water pump is started by the "S" signal.

3. ECCS pump room air handling unit fans for the charging pump rooms and residual heat removal/reactor building spray pump rooms to provide ventilation and cooling for the ECCS pumps. Starting and operation of these fans is interlocked with starting and operation of the ECCS pumps.

4. Ventilation systems for the control room, relay room and ESF switchgear rooms (see Sections 9.4.1.2.1, 9.4.1.2.2 and 9.4.6.2.2); to provide ventilation for controls associated with ECCS equipment.

Table 440.38-1 is a list of pumps and valves required for ECCS operation along with their safety classification. Each component is Seismic Category I.

Table 440.38-1

PUMPS AND VALVES REQUIRED FOR ECCS OPERATION

	Tag #	System	Train	Safety Class	Operator*
Valves:	9431 A/B	CC	SA/SB	3	M
	9370	CC	SA	3	M
	9371	CC	SB	3	M
	9384	CC	SA	3	M
	9385	CC	SB	3	M
	8888 A/B	SI	SA/SB	2	M
	8887 A/B	SI	SA/SB	2	M
	8889	SI	SA	2	M
	8811 A/B	SI	SA/SB	2	M
	8812 A/B	SI	SA/SB	2	M
	8809 A/B	SI	SA/SB	2	M
	8808 A/B/C	SI	SA/SB/SA	2	M
	8706 A/B	RH	SA/SB	2	M
	8801 A/B	SI	SA/SB	2	M
	8803 A/B	SI	SA/SB	2	M
	8885	SI	SA	2	M
	8886	SI	SB	2	M
	8884	SI	SA	2	M
	FCV 113 A	CS	SN	3	A
	8105	CS	SB	3	M
	8106	CS	SA	2	M
	8108	CS	SB	2	M
	8133 A/B	CS	SA/SB	2	M
	8132 A/B	CS	SA/SB	2	M
	8109 A/B/C	CS	SB/SB/SB	2	M
	8131 A/B	CS	SA/SB	2	M
	8130 A/B	CS	SA/SB	2	M
	LCV 115 C/E	CS	SA/SB	2	M
	LCV 115 B/D	CS	SA/SB	2	M
	8104	CS	SB	2	M
	3SW - B1SA-1	SW	SA	3	M
	3SW - B2SB-1	SW	SB	3	M
	3SW - B3SA-1	SW	SA	3	M
	3SW - B4SB-1	SW	SB	3	M
	3SW - B5SA-1	SW	SA	3	M
	3SW - B6SA-1	SW	SA	3	M
Pumps:	APCH 1/2/3	CS	SA/SAB/SB	2	
	APHR 1/2	RH	SA/SB	2	
	APCC 1/2/3	CC	SA/SAB/SB	3	
	APSN - 1A-SA	SW	SA	3	
	APSN - 1B-SB	SW	SB	3	

*Note: M = Motor, A = Air

(6597JDKkjr)

OPEN ITEM 52

Provide procedures for resetting the ECCS after a safety injection signal (Question 440.119). (Section 6.3.2)

NRC Question 440.119

Question 440.39 response should be updated to provide the specified information requested following the development of Shearon Harris procedures based on the Emergency Response Guidelines (ERGs).

Response to NRC Question 440.119

The response to Question 440.39 will be updated as requested following the development of Shearon Harris specific Emergency Operating Procedures. These procedures will be based on the Westinghouse Owners Group Emergency Response Guidelines. We anticipate that these procedures will be developed with sufficient detail to update our response to NRC Question 440.39 by the fourth quarter of 1983.

OPEN ITEM 215

Analyze the consequences of intermediate steam line breaks from full power, with the offsite power being lost at the worst time and the reactor trip occurring on the first safety grade trip (Question 440.109). (Section 15.1.5)

Question 440.109 (15.1.5):

Provide or reference an appropriate sensitivity study for the main steam line break accident. Verify that the most conservative assumptions were used to analyze the accident. Based on recent main steamline break analyses from other PWR vendors, there is concern that certain break sizes coupled with a loss of offsite power at the worst point in the transient may result in significantly more fuel damage and offsite consequences than was predicted. Provide an analysis showing the consequences of intermediate steam line breaks full power, with offsite power being lost at the worst time and the reactor trip occurring on the first safety grade trip.

Response to Question 440.109:

Sensitivity studies for the main steamline break accident are presented in WCAP-9226, "Reactor Core Response to Excessive Secondary Steam Releases" (proprietary Class 2). Studies addressing intermediate break sizes, initial power level, loss of offsite power, and various trips are included in this report. The result of WCAP-9226 show that the steamline break cases presented in the FSAR (double ended rupture at zero power with or without offsite power available) are more limiting than a smaller break occurring from full power with offsite power lost during the transient.