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

SUBJECT: Forwards responses to Procedures & Sys Review Branch draft SER on Open Items 200, 205 & 206 re proposed method for measuring process-to-sensor response time.

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CP&L

Carolina Power & Light Company

SERIAL: LAP-83-147

MAY 18 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
PROCEDURES AND SYSTEMS REVIEW BRANCH

Dear Mr. Denton:

Carolina Power & Light Company (CP&L) hereby transmits one original and forty copies of the responses to the Shearon Harris Nuclear Power Plant Draft Safety Evaluation Report (DSER) CP&L Open Items 200, 205, and 206.

Carolina Power & Light Company will be providing responses to other Open Items in the DSER shortly.

Yours very truly,

M. A. McDuffie
Senior Vice President
Engineering and Construction

PS/kjr (6766PSA)
Attachments

cc: Mr. N. Prasad Kadambi (NRC)
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ATTACHMENT I

Responses to
Open Item Nos. 200, 205, and 206

Open Item No. 200 (DSER Section 14, page 14-7)

Modify the response to Q640.28 to revise the current proposed method of measuring process-to-sensor response time to either reference vendor information which justifies the sensor delay time, or provide those assumed delay times and the basis for not measuring them experimentally. In addition, the reference to bypass resistance temperature detectors (RTDs) in the response should be modified to conform with that used in Test Summary 14.2.12.2.19 (hot leg RTDs).

Response to Open Item No. 200

The revised response to FSAR Safety Review Question 640.28, contained in Attachment II, resolves this Open Item.

Open Item No. 205 (DSER Section 14, page 14-8)

Indicate under which specific test abstract (regarding sump level control) the operation of each level control switch will be demonstrated.

Response to Open Item to 205

The revised response to FSAR Safety Review Question 640.5.1.j(20), contained in Attachment II, resolves this Open Item.

Open Item No. 206 (DSER Section 14, page 14-8)

Establish correlation between instruments listed in FSAR Section 7.5 and the applicable test abstracts.

Response to Open Item No. 206

The revised response to FSAR Safety Review Question 640.5.1.j(22), contained in Attachment II, resolves this Open Item.

ATTACHMENT II

Revised Responses to FSAR
Safety Review Question Nos. 640.28, 640.5.1.j(20),
and 640.5.1.j(22)

FSAR Safety Review Question 640.28

Expand the Preoperational Reactor Protection System Engineered Safety Features Actuation Response Time Test Summary to:

(1) Account for process-to-sensor hardware (e.g., instrument lines, hydraulic snubbers) delay items;

(2) Provide assurance that the response time of each primary sensor is acceptable; and

(3) Provide assurance that the total reactor protection system response time is consistent with your accident analysis assumptions.

NOTE: Item 2 can be accomplished by measuring the response time of each sensor during the preoperational test, stating that the response time of each sensor will be measured by the manufacturer within two years prior to fuel loading, or describing the manufacturer's certification process in sufficient detail for us to conclude that the sensor response times are in accordance with design.

The original response to 640.28 was revised to delete "bypass RTDs" and insert the correct name "hot leg RTDs"

Revised Response to Question 640.28

Test Summary 14.2.12.1.11 provides the methods to be used to verify that the overall reactor trip and engineered safety features actuation times, as defined in Section 7.1.0 and NUREG-0452, Revision 3, are within the accident analysis assumptions. The overall response time will be a summation of measured values and/or assumed values which are then proven to be conservative. This is the method prescribed by Westinghouse.

The response time of each individual sensor need not be determined if the overall loop response time is acceptable (e.g., a hydraulic actuator plus sensor is less than the maximum acceptable sensor response time) or if the sensor can be shown to be within the assumed values.

Per FSAR Section 15.0.6, the "nominal trip setpoints" (those referenced as the acceptance criteria for the subject test summary), represent an allowance for instrumentation channel error and setpoint error. The process to sensor coupling response times, except for the hot leg RTDs which will be tested in test summary 14.2.12.2.19, are all impulse lines which, by virtue of calculation and test at other similar plants, provide negligible response times. These times are adequately consumed in the tolerance provided between the limiting and nominal trip points such than an extensive test program to measure the negligible response time is not required to assume an adequate safety margin. Therefore, it is SHNPP's and Westinghouse's positions that the process to sensor coupling response times, except as noted for the hot leg RTDs, are too minute to be considered in light of the conservatively selected sensor response time limits used for the SHNPP accident analysis.

FSAR Safety Review Question 640.5.1.j(20)

Regulatory Guide 1.68, Initial Test Programs for Water-Cooled Nuclear Power Plants (Revision 2). FSAR Section 1.8 indicates compliance with this guide and references FSAR Section 14.2. FSAR Subsection 14.2.7 does not list any exceptions to this guide, yet review of the preoperational and start-up test abstracts disclosed that the operability of several of the systems and components listed in Regulatory Guide 1.68 (Revision 2), Appendix A, may not be demonstrated in Subsection 14.2.12. Expand your test abstracts to address instrumentation used to detect external and internal flooding conditions that could result from such sources as fluid system piping failures. The NRC requested that CP&L revise the original response to 640.5.1.j(20) to indicate which sump pump level switches will be tested during preoperational testing and the associated test abstracts.

Revised Response to Question 640.5.1.j(20)

If piping fails, the water normally flows through a floor drain into a sump. As the water level rises, a level switch will cause one sump pump to begin operation and send flow to a collection tank. If one pump cannot handle the flow and the sump level continues to rise, another level switch starts the second sump pump and causes an alarm initiation on the Waste Processing Control Board (WPCB). This alarm initiation on the WPCB is the instrument that will be used to detect flooding.

Level switches for all sump pumps will be tested in accordance with the Liquid Waste Processing System Preoperational Test as described in FSAR Section 14.2.12.1.40. A delineation of the sump(s) with their respective abstracts is shown below.

Floor drain sumps - Preoperational Test 1-6235-P-01
Equipment drain sumps - Preoperational Test 1-6240-P-01
Secondary drain sumps - Preoperational Test 1-6242-P-01
Cooling water drain sumps - Preoperational Test 1-4082-P-01
Detergent drain sumps - Preoperational Test 1-6245-P-01

FSAR Safety Review Question 640.5.1.j(22)

Regulatory Guide 1.68, Initial Test Programs for Water-Cooled Nuclear Power Plants (Revision 2). FSAR Section 1.8 indicates compliance with this guide and references FSAR Section 14.2. FSAR Subsection 14.2.7 does not list any exceptions to this guide, yet review of the preoperational and start-up test abstract disclosed that the operability of several of the systems and components listed in Regulatory Guide 1.68 (Revision 2), Appendix A, may not be demonstrated in Subsection 14.2.12. Expand your test abstracts to address instrumentation that can be used to track the course of postulated accidents such as containment wide-range pressure indicators, containment sump, high-range radiation detection devices, and humidity monitors. The original response to 640.5.1.j(22) was revised to denote the test abstracts which apply to FSAR Section 7.5.1.8 and the specific system parameters that will be tested during individual component check-out activities.

Revised Response to Question 640.5.1.j(22)

Instrumentation for the tracking of postulated accidents is listed in Section 7.5. As a rule, this instrumentation is tested as a part of the appropriate system checkout. Recent changes to regulatory requirements have resulted in changes to accident monitoring requirements. Any additional accident monitoring instrumentation incorporated into the design will be added in a future revision to the FSAR which will include any necessary changes to Section 7.5 and testing abstracts that may be necessary.

For those instruments listed in FSAR Section 7.5.1.8, the following test abstracts apply: 14.2.12.1.16, 14.2.12.1.19, 14.2.12.1.20, 14.2.12.1.30, 14.2.12.1.34, 14.2.12.1.37, 14.2.12.1.47, and 14.2.12.1.50.

The following system parameters will be tested as part of the individual component checkout:

(1) Reactor coolant COLD LEG and HOT LEG temperature (loops 1 and 2 only)
(2) Reactor coolant pressure (wide range)
(3) Containment Pressure
(4) Steam line pressure
(5) Component cooling water heat exchanger discharge temperature
(6) Refueling water storage tank level
(7) Containment sump level