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AUTH. NAME AUTHOR AFFILIATION
CUTTER, A. B. Carolina Power & Light Co.
RECIP. NAME RECIPIENT AFFILIATION
DENTON, H. R. Office of Nuclear Reactor Regulation, Director (post 851125

SUBJECT: Forwards addl info re inservice pump & valve testing program, supplementing Rev 3 to program submitted on 860916, per NRC request. Valves 1AF-16 & 1AF-31 will be tested on cold shutdown frequency.

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CP&L

Carolina Power & Light Company

SERIAL: NLS-86-482

DEC 3 1 1986

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

SHEARON HARRIS NUCLEAR POWER PLANT
DOCKET NO. 50-400/LICENSE NO. NPF-53
IN-SERVICE PUMP AND VALVE TESTING PROGRAM

Dear Mr. Denton:

Carolina Power & Light Company hereby submits information concerning the In-Service Pump and Valve Testing (IST) Program. This information is being submitted as a result of discussions with the NRC Staff. The attached responses supplement our IST Program (Revision 3) as submitted on September 16, 1986.

Yours very truly,

A. B. Cutter - Vice President
Nuclear Engineering & Licensing

ABC/SDC/ccj (5103SDC)

Attachment

cc: Mr. B. C. Buckley (NRC)
Mr. G. F. Maxwell (NRC-SHNPP)
Dr. J. Nelson Grace (NRC-RII)
Mr. C. Ransom (EG&G)

B001
1/1

411 Fayetteville Street • P. O. Box 1551 • Raleigh, N. C. 27602

ATTACHMENT TO

NLS-86-482

(1293NEL/ccj)

SHEARON HARRIS NUCLEAR POWER PLANT
PUMP AND VALVE IN-SERVICE TESTING PROGRAM
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

1. Question

The licensee has not provided a good technical basis for not full-stroke exercising auxiliary feedwater valves 1AF-16 and 31 during each cold shutdown. This information should be provided in Relief Request RV-1 or these valves should be full-stroke exercised on a cold shutdown frequency.

Response

The valves 1AF-16 and 1AF-31 will be tested on a cold shutdown frequency.

2. Question

If auxiliary feedwater valves 1AF-19, 34, 49, 50, 51, 129, 130, and 131 have a required fail-safe position, then they perform an active safety-related function and they must be exercised and have their full-stroke times measured to verify that they can perform that function and to detect degradation that might lead to valve failure. If shutting off the auxiliary feedwater pumps has the same effect as removing power to these valves and results in the valves going to their fail-safe position, then that is considered a fail-safe test as required by the code and no relief is necessary from the fail-safe testing requirement. However, these valves perform an active safety function and are not exempt from the Section XI testing that is designed to detect valve degradation.

Response

In order to avoid the thermal shock problem of testing these valves on a quarterly time frame, the valves 1AF-19, 34, 49, 50, 51, 129, 130, and 131 will be tested on a cold shutdown frequency.

3. Question

The NRC staff position is that two series check valves cannot be verified in the closed position together as a pair, the valve or valves for which credit is taken for reverse flow closure must be individually verified capable of performing that safety function. This applies to the following auxiliary feedwater valves:

1AF-54	1AF-136
1AF-73	1AF-142
1AF-92	1AF-148
1AF-117	

Response

The valves 1AF-54, 73, 92, 117, 136, 142, and 148 will be verified to be in the closed position by acoustic detection. The valves will be leak tested in pairs using installed temperature elements.

4. Question

Has a testing method been decided upon for auxiliary feedwater valves 1AF-65, 84, and 103 (refer to Relief Request RV-5)?

Response

The method of testing 1AF-65, 84, and 103 is to disassemble one valve at each refueling.

5. Question

Provide a more detailed technical justification for not exercising auxiliary feedwater valves 1AF-117, 136, 142, and 148 at a cold shutdown frequency. The provided justifications are more inconvenience than valid justifications such as thermal shock to the feedwater piping and nozzles. Most other facilities with similar design exercise these valves at cold shutdowns. (Refer to Relief Request RV-7.)

Response

The valves 1AF-117, 136, 142, and 148 will be tested when going to a cold shutdown.

6. Question

Condensate valves 1CE-36 and 46 should be full-stroke exercised on a cold shutdown frequency according to the NRC staff positions on cold shutdown testing unless a more detailed technical justification is provided. Also, if there are any deviations from the code other than going from the quarterly to the cold shutdown frequency, a cold shutdown justification should not be used. There is both a cold shutdown justification and a relief request for these valves; these should be combined into a single relief request.

Response

See response to Question 7.

7. Question

The basis for relief in condensate Relief Request RV-2 for valve 1CE-56 does not provide an adequate technical justification for not full-stroke exercising this valve on a cold shutdown frequency (refer to Item 5 above).

Response (to Questions 6 and 7)

The valves 1CE-36, 46, and 56 are of the same material, type, and manufacturer. These valves will be tested by disassembly. One valve will be disassembled at each refueling. The relief requests will be combined and adjusted to reflect this test method.

8. Question

The basis for relief in containment spray Relief Request RV-2 for valves 1CT-102 and 105 does not provide an adequate technical justification for not exercising these valves during cold shutdown.

Response

The valves 1CT-102 and 105 will be tested at cold shutdown.

9. Question

Containment spray system Relief Request RV-3 is not required because the spray additive tank vacuum breakers are spring-loaded check valves that are performing a relief valve function and are being tested as relief valves in accordance with the requirements of Section XI, IWV-3510. An explanatory note that identifies the valve type and the testing performed would be sufficient.

Response

The vacuum breakers do perform a relief function. One valve will be tested as a relief valve per IWV-3510 using the manufacturer's recommended test procedure at each refueling.

10. Question

The proposed testing for valves 1IA-784, 785, 786, 787, 788, and 789 in instrument air Relief Request RV-2 is not acceptable. Refer to the staff position in Item 3 above.

Response

We will disassemble one valve on the accumulator side and one valve on the instrument air side at each refueling.

11. Question

No technical justification was provided as a basis for not exercising valves 1CS-341, 382, 423, 470, and 472 (CVCS Relief Request RV-1) during cold shutdowns when the RCS is vented or open to the atmosphere. Unless a justification is provided and found acceptable, these valves should be exercised during those cold shutdowns.

Response

The valves 1CS-341, 382, 423, 470, and 472 will be tested at cold shutdown when the RCS is open, vented, and drained to the top of the vessel flange.

12. Question

Provide a more detailed technical justification for not exercising valves 1CS-165, 166, 291, and 292 during cold shutdowns (refer to CVCS Relief Request RV-3). What is the flow rate of RWST water that would result and for how long would it be maintained while testing these valves? What boric acid concentration could result in damage to the reactor coolant pump seals? Could any significant seal wear occur given the boric acid concentration and the limited time that this higher concentration would be experienced during valve testing? How would boric acid cause increased seal wear if it remains in solution during valve testing?

Response

The valves 1CS-165, 166, 231, and 292 will be tested at cold shutdown.

13. Question

Provide a more detailed technical justification for not exercising valve 1CS-279 during cold shutdowns (refer to CVCS Relief Request RV-5).

Response

The valve 1CS-279 will be tested when borating on the way to cold shutdown.

14. Question

Provide a more detailed technical justification for not exercising valve 1CS-294 during cold shutdowns (refer to CVCS Relief Request RV-6).

Response

The valve 1CS-294 will be tested during cold shutdown.

15. Question

The proposed testing for valves 1CC-118 and 119 in component cooling water Relief Request RV-1 is not acceptable. Refer to the staff position in Item 3 above.

Response

We plan to either install a test tap between the valves or remove the internals of one of the valves.

16. Question

The requests for relief from measuring emergency service water pump bearing temperature and vibration do not identify any alternate means of determining pump mechanical condition for these pumps. Past experience by other utilities has show that measuring vibration on the upper motor bearing (which is normally a thrust bearing that wholly or partially supports the pump shaft and impeller) will provide information that can be used to determine pump and shaft bearing condition. This or some other appropriate alternate method should be employed to monitor the emergency service water pumps at Shearon Harris.

Response

ESW pump flow and psid will be plotted on pump curve to check for degradation of the pump. Vibration measurements will also be taken.

17. Question

Pump Relief Request PR-5 states that the emergency service water intake screen wash pump flow rate will vary constantly during pump operation and that it is not possible to establish a repeatable set of pump test conditions. If pump flow varies widely, how is pump differential pressure to be used to evaluate pump performance? What acceptable, alert, and required action ranges do you use for pump differential pressure? Review the safety-related function of this pump.

Response

ESW intake screen wash pump psid and ultrasonic measured flow will be plotted on pump curve to check for degradation of the pump. Vibration movement will also be taken.

18. Question

Provide the justification for not testing the boric acid transfer pumps when borating the reactor coolant system when entering cold shutdowns. Provide a more detailed justification why vibration measurements cannot be taken on the motor casing of the boric acid transfer pumps; other utilities measure vibration on similar pumps.

Response

Vibration measurements will be taken on the boric acid transfer pumps. Flow will be measured through the emergency boration path when borating on the way to cold shutdown.

19. Question

Does the manual exercising procedure identified for valves 1CB-3, 1CB-7, and 1CM-7 in containment HVAC Relief Request RV-1 employ a method to quantitatively measure the torque required to open the valves as required by Section XI, IWV-3522(b)? If the torque is measured, the method used should be identified in the relief request. If torque is not measured, a quantitative test should be developed to detect valve degradation.

Response

We will verify reverse flow closure on valves 1CB-3 and 7 and 1CM-7 by visual inspection. The torque required to open the valves will be measured by a spring scale. These valves will be inspected at refueling.

20. Question

In reference to Cold Shutdown Test CS-1 for the safety injection system, why can't the charging pumps be used to verify forward flow operability of check valves 1SI-81, 82, 83, 134, 135, 136, 137, 346, 347, 356, 357, and 358?

Response

Testing these valves with high head safety injection will cause pressurizer level control problems along with borating the RCS possibly leading to a reactor scram.

21. Question

In reference to Cold Shutdown Test RV-2 for the component cooling water system, why must all the reactor coolant pumps be secured to test valves 1CC-207, 208, 249, 251, 297, and 299?

Response

Stroking these valves to the RCP thermal barriers and bearing oil coolers will not contribute to pump degradation due to the short time flow will be stopped. The relief request will be revised to read exercise and time at cold shutdown when the RCS temperature is less than or equal to 200 degrees. It is our intent to perform this test when the RCPs can be stopped.

22. Question

In reference to Cold Shutdown Test RV-4 for the auxiliary feedwater system, why can't the steam generators be drained during short duration cold shutdowns to allow testing of valves 1AF-54, 73, and 92?

Response

The valves 1AF-54, 73, and 92 will be forward flow tested on the way to cold shutdown when the auxiliary feedwater system is in operation.

(1293NEL/ccj)