

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)



Carolina Power & Light Company
PO Box 165
New Hill NC 27562

James Scarola
Vice President
Harris Nuclear Plant

AUG 31 1998

SERIAL: HNP-98-120

United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

SHEARON HARRIS NUCLEAR POWER PLANT
DOCKET NO. 50-400/LICENSE NO. NPF-63
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING THE
AUXILIARY FEEDWATER SYSTEM LICENSE AMENDMENT REQUEST

Dear Sir or Madam:

Per a telephone call on August 7, 1998, the NRC requested additional information on a Carolina Power & Light Company (CP&L) request for a license amendment regarding the Auxiliary Feedwater (AFW) System surveillance requirements at the Harris Nuclear Plant (HNP). By letter dated December 16, 1997, CP&L submitted a request to revise HNP Technical Specification (TS) 4.7.1.2.1.a.2.a. This TS revision would change the differential pressure and flow requirements of the turbine-driven AFW pump to allow testing of the pump at a lower speed than is currently performed. The additional information was requested to be provided within three weeks of the date of the telephone call.

A written response providing the requested information is provided in the enclosure to this letter. Questions regarding this matter may be referred to Mr. J. H. Eads at (919) 362-2646.

Sincerely,

AEC/aec

Enclosure

c: Mr. J. B. Brady (NRC Senior Resident Inspector, HNP)
Mr. L. A. Reyes (NRC Regional Administrator, Region II)
Mr. S. C. Flanders (NRR Project Manager, HNP)

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Requested Information Item 1:

Please describe the conditions under which the turbine-driven auxiliary feedwater pump (TDAFWP) would operate at 4100 rpm.

Response 1:

The current setpoint of the TDAFWP differential pressure controller is 28 psig. As a result, the controller will maintain pump discharge pressure 28 psig greater than steam inlet pressure. The controller will vary pump speed with steam generator (SG) pressure to maintain the required 28 psig. Therefore, as steam generator pressure increases, pump speed (and hence pump discharge pressure) will increase. The maximum pump flowrate at a controller setpoint of 28 psig is approximately 550 gpm. As stated in the Harris Nuclear Plant (HNP) Final Safety Analysis Report, the highest steam generator pressure at which the AFW pumps are required to inject water into the SGs is 1205 psig (the first safety valve setpoint of 1170 psig plus 3% accumulation, which equals 1205 psig). This combination of approximately 550 gpm and steam generator pressure of 1205 psig results in the pump running at a pump speed of less than 4100 rpm, but greater than 3700 rpm. The pump's original design point is 900 gpm and 1265 psig (2940 ft) at a speed of 4100 rpm. Therefore, with the exceptions of the TDAFWP runout case during a MSLB or FWLB accident, or manual adjustment to 4100 rpm, the current HNP design does not require the TDAFWP to run at 4100 rpm.

During a Main Steam Line Break (MSLB) or Feedwater Line Break (FWLB) accident, between the time the Main Steam Isolation Valves (MSIVs) close and the time the AFW isolation signal occurs, the pump will be operating at maximum speed (4125 rpm) for approximately 60 seconds. This is due to high steam generator pressure and low pump discharge pressure. Under these circumstances, the controller cannot maintain the discharge pressure 28 psig higher than steam inlet pressure, therefore, the turbine goes to maximum speed.

Requested Information Item 2a:

Please provide any test data that supports the new surveillance criteria values that were derived using the pump affinity law.

Response 2a:

The calculated numbers in the engineering evaluation were verified by Inservice Testing (IST).

The reference values for IST are as follows:

Set Speed: 3715 rpm (range 3700 - 3725)
Set Flow: 90 gpm (range 89 - 91)
Calculated dP: 1233.5 psid (range 1167 - 1356.85)

The calculated numbers in the engineering evaluation are as follows:

Set Speed: 3700 rpm
Set Flow: 81 gpm
Calculated dP: 1216 psid (4% degraded value = 1167 psid)

Speed and flow values are set and the pump dP is calculated. The IST reference value of 1233.5 psid is greater than the calculated value in the engineering evaluation because the IST reference speed is 3715 rpm. In addition, the calculated values in the engineering evaluation are based on the original pump curves.

The minimum value for IST takes into account the HNP Technical Specification (TS) degradation allowance of 4%. The reference value for IST would normally range from .9 - 1.1 of the calculated dP value, or 1110.15 - 1356.85 psid. However, to meet TS requirements, the minimum range value was set at 1167 psid.

Requested Information Item 2b:

Describe how this test data (from 2a) justifies the scaling factors (significant digits) of these derived values.

Response 2b:

The significant digits used in the engineering evaluation were consistent with the original TS values approved by the NRC. Also, the basis calculation for the old and new TS numbers used the same significant digits. IST data uses one more significant digit than that of TS. This is consistent with IST data taken at HNP.

