Progress Energy

James Scarola
Vice President
Harris Nuclear Plant
Progress Energy Carolinas, Inc.

SERIAL: HNP-04-061

JUN 2 3 2004

U. S. Nuclear Regulatory Commission
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SHEARON HARRIS NUCLEAR POWER PLANT, UNIT NO. 1
DOCKET NO. 50-400/LICENSE NO. NPF-63

SUPPLEMENTAL INFORMATION TO THE REQUEST FOR ADDITIONAL INFORMATION REGARDING GENERIC LETTER 96-06, "ASSURANCE OF EQUIPMENT OPERABILITY AND CONTAINMENT INTEGRITY DURING DESIGN-BASIS ACCIDENT CONDITIONS"

Ladies and Gentlemen:

By letter dated January 19, 2004, Progress Energy Carolinas, Inc.'s Harris Nuclear Plant (HNP) provided supplemental information to an NRC request for additional information regarding Generic Letter (GL) 96-06, "Assurance of Equipment Operability and Containment Integrity During Design-Basis Accident Conditions."

In telephone calls on February 12, 2004 and March 4, 2004, it was determined that supplemental information would facilitate the NRC's review of the HNP response to the request for additional information. Attachment 1 provides the requested supplemental information.

Please refer any questions regarding this submittal to Mr. John Caves at (919) 362-3137.

I declare, under penalty of perjury, that the attached information is true and correct.
(Executed on JUN 2 3 2004 .)

Sincerely,

James Scarola

JS/jpy

Attachment: 1. Supplemental Information to the Request for Additional Information Regarding Generic Letter (GL) 96-06

P.O. Box 165
New Hill, NC 27562

T > 919.362.2502
F > 919.362.2095

A072

c: Mr. R. A. Musser, NRC Sr. Resident Inspector
Mr. C. P. Patel, NRC Project Manager
Dr. W. D. Travers, NRC Regional Administrator

ATTACHMENT 1 TO SERIAL: HNP-04-061

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT NO.1
SUPPLEMENTAL INFORMATION TO THE REQUEST FOR ADDITIONAL INFORMATION
REGARDING GENERIC LETTER (GL) 96-06

Background

By letter dated January 19, 2004, Progress Energy Carolinas, Inc.'s Harris Nuclear Plant (HNP) provided supplemental information to an NRC request for additional information regarding Generic Letter (GL) 96-06, "Assurance of Equipment Operability and Containment Integrity During Design-Basis Accident Conditions." In telephone calls between HNP and NRC personnel on February 12, 2004 and March 4, 2004, it was determined that supplemental information would facilitate the NRC's review of the HNP response to the request for additional information. This information is required since HNP's resolution of GL 96-06 waterhammer issue relies, in part, upon loss of offsite power (LOOP) testing that was completed at HNP. The following supplemental information is provided:

Requested Supplemental Information:

1) What check valves are in the flowpath that were relied on to be leak-tight when the LOOP testing was performed?

2) How does HNP ensure that backleakage through these check valves will not increase over time and that the LOOP test results remain valid over the life of the plant?

3) What specific leakage criteria and surveillance tests have been (or will be) established?

ATTACHMENT 1 TO SERIAL: HNP-04-061

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT NO.1
SUPPLEMENTAL INFORMATION TO THE REQUEST FOR ADDITIONAL INFORMATION
REGARDING GENERIC LETTER (GL) 96-06

Supplemental Information Request #1

What check valves are in the flowpath that were relied on to be leak-tight when the LOOP testing was performed?

Response

Each of the two emergency service water (ESW) pumps has a discharge check valve (1SW-9 and 1SW-10). The system relies on these check valves to prevent reverse rotation of the ESW pumps during normal system operation with pressure supplied from the normal service water (NSW) system. Thus, the subject loss of offsite power (LOOP) testing would have depended on these valves to prevent reverse rotation of the ESW pumps and to limit or prevent system drainage, which could subsequently result in some system voiding.

Additionally, a check valve (1SW-50) exists at the interface between the NSW system and the ESW system. However, the subject LOOP testing did not depend on this check valve during that testing since the isolation valves downstream of this check valve were shut (1SW-39 and 1SW-40).

In addition, as described in the response to supplemental information request #2 below, if potential backleakage does occur in these check valves creating a potential void, for HNP's configuration, the potential void will not have a significant impact on the HNP waterhammer analysis.

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SUPPLEMENTAL INFORMATION TO THE REQUEST FOR ADDITIONAL INFORMATION
REGARDING GENERIC LETTER (GL) 96-06

Supplemental Information Request #2

How does HNP ensure that backleakage through these check valves will not increase over time and that the LOOP test results remain valid over the life of the plant?

Response

In 2000, the discharge check valves, 1SW-9 and 1SW-10, of the ESW pumps were replaced with stainless-steel valves to increase reliability, and the frequency for visual inspection, in accordance with the Generic Letter (GL) 89-13 service water program, was established at once every 6 years. Prior to replacement, the last inspection results showed these valves to be in an acceptable condition. Inspections of other stainless-steel valves in the ESW system show very good materiel condition. In addition, recent walk-downs during system operation have not revealed any audible indication of seat leakage. Since plant start-up, HNP has performed quarterly backleakage testing, in accordance with the inservice testing (IST) pump and valve program, to verify that these check valves stroked closed by measuring the check valve's differential pressure with the ESW pump secured. The above provides assurance that valves 1SW-9 and 1SW-10 are and will remain in good condition.

The check valve, 1SW-50, at the interface between the NSW system and the ESW system is visually inspected, in accordance with the GL 89-13 service water program, once every 9 years. The last inspection results showed this valve to be in good condition. The isolation valves (1SW-39 and 1SW-40) downstream of this check valve are tested quarterly in accordance with the IST pump and valve program. The above provides assurance that check valve 1SW-50 and isolation valves 1SW-39 and 1SW-40 downstream of this check valve are and will remain in good condition.

The periodic inspections, walk-downs, and testing described above are performed to provide assurance that backleakage through these check valves will not increase over time and that the LOOP test results remain valid over the life of the plant.

However, if a potential increase in backleakage does occur, a review of HNP's configuration concluded that an increase in void size will not have a significant impact on the HNP waterhammer analysis. Electric Power Research Institute (EPRI) TR-106438, Water Hammer Handbook for Nuclear Plant Engineers and Operators, Section 6.8, titled "Filling of a Voided Line," addresses the "Assessment Method for Column Rejoining." Using this methodology, for HNP's configuration, the fL/2D value is approximately 19.3. Figure 6.8-2 is a plot of the impact velocity for filling a voided line liquid column as a function of the dimensionless parameter, fL/2D, for a range of initial liquid column length. This plot shows that for fL/2D values greater than 10, the impact velocities for the various void ratios are converging, and that the impact velocity approaches the steady-state velocity of the liquid column. Therefore, for HNP's configuration, an increase in the void size will not have a significant impact on the HNP waterhammer analysis.

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Supplemental Information Request #3

What specific leakage criteria and surveillance tests have been (or will be) established?

Response

Periodic inspections, walk-downs, and testing for the boundary valves are described in the response to supplemental information request #2 above. No other specific leakage criteria or surveillance testing are required or have been established.