Progress Energy

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10 CFR 50.55a

U.S. Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT NO. 1
DOCKET NO. 50-400/LICENSE NO. NPF-63

RESPONSE TO THE REQUEST FOR ADDITIONAL INFORMATION ON THE RELIEF REQUEST FROM INSERVICE INSPECTION PROGRAM NO. 2R1-015 ALTERNATIVE TO ASME CODE SECTION XI, IWA-4000 REQUIREMENTS

Ladies and Gentlemen:

On January 26, 2006, the NRC requested additional information to facilitate the review of Harris Nuclear Plant's (HNP) Request for Relief 2R1-015 (HNP-05-128 dated November 18, 2005) regarding requirements for the pressure testing of piping and valves within the Class 1 pressure boundary.

Attachment 1 provides the requested additional information. Attachment 2 provides amended sections of Table 1 for Relief Request 2R1-015.

This document contains no new regulatory commitment.

Please refer any question regarding this submittal to Mr. Dave Corlett at (919) 362-3137.

Sincerely,

C. S. Kamilaris

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Manager, Site Support Services
Harris Nuclear Plant

CSK/khv

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Attachments:

1. Response to the Request for Additional Information on Request for Relief 2R1-015 regarding requirements for the pressure testing of piping and valves within the Class 1 pressure boundary.
2. Amended sections of Table 1 for Relief Request 2R1-015 (HNP-05-128).

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

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RAI No. 2RI-015-1:

Code Case N498-4 has been incorporated into Regulatory Guide 1.147, Revision 14, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1," and has been invoked by reference in 10 CFR 50.55a(b)(5) as an acceptable alternative to the hydrostatic test requirements for ASME Code Class 1 systems that are specified of Section XI Table IWB-2500-1, Examination Category BP. However, the alternative pressurization criteria in ASME Code Case N-498-4 do not provide the mandated Section XI requirements for pressurizing the ASME Code Class 1 reactor coolant pressure boundary (RCPB) during commencement of these hydrostatic pressure tests. Instead the requirements for pressurization of the RCPB during the hydrostatic pressure test are provided in Section XI Paragraph IWB-5222(a) and in Section XI Table IWB-5222-1 as invoked by Section XI Paragraph IWB-5222(a). Therefore, the staff requests that the RR No. 2R1-015 be amended to specify that HNP is requesting relief from the following Section XI requirements (as invoked by 10 CFR 50.55a(g)(4)): (1) Table IWB-2500-1, Examination Category B-P, Inspection Items B15.51 (Piping) and B15.71 (Valves); (2) Paragraph IWB-5222(a); and (3) the pressure criteria that are specified in Table IWB-5222-1 for performing the system hydrostatic pressure tests.

Response:

Applicable sections of RR 2R1-015 are amended to read as follows:

ASME Code Component(s) Affected

Code Class:	1
References:	IWB-2500
Examination Category:	B-P
Item Number:	B15.51, B15.71
Description:	Piping and valves within the Class 1 pressure boundary. It includes Reactor Coolant, Charging, Safety Injection, and Residual Heat Removal Systems.
Component:	Process piping, drains, vent, test, and fill lines within the Class 1 pressure boundary.

Applicable Code Edition and Addenda

ASME Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," Code 1989 Edition, no Addenda.

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Applicable Code Requirement

Table IWB-2500-1, Examination Category B-P, Note 2 states, "The pressure retaining boundary during system hydrostatic test shall include all Class 1 components within the system boundary."

Note: HNP intends to use Code Case N-498-4 to satisfy the 10-Year System Hydrostatic Testing of Class 1, 2, and 3 components. Code Case N-498-4 is approved for use in Regulatory Guide 1.147 with conditions and will be implemented in its entirety with the exception of extending the pressure boundary to the second isolation valve for the piping segments identified in RR 2R1-015.

Relief is requested from ASME Section XI, Table IWB-2500-1, Examination Category B-P, Note 2 regarding extension of the pressure retaining boundary during system pressure tests conducted at or near the end of each inspection interval to Class 1 pressure retaining components within the system boundary. Relief is also requested from Paragraph IWB-5222(a); and the pressure criteria that are specified in Table IWB-5222-1 for performing the system hydrostatic pressure tests.

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RAI No. 2RI-015-2:

On page A1 of RR No, 2R1-015, HNP states that Code Case N-498-4 will be used as the basis for the proposed alternative pressure tests of the component piping segments in RR No. 2R1-015, with the exception of the Code Case N-498-4 paragraph (a)(2), which states that the "boundary subject to the test pressurization will extend to all Class 1 pressure retaining components with the system boundary." Confirm that the hold time requirements and test temperature requirements for the alternative pressure tests are those that are specified in Paragraphs (a)(3) and (a)(4) of Code Case N-498-4.

Response:

Code Case N-498-4 will be implemented in its entirety with the exception of extending the pressure boundary to the second isolation valve for the piping segments identified in RR 2R1-015. The alternative pressure tests proposed in RR No. 2R1-015 will be subject to the minimum hold times and test temperature requirements for the alternative pressure tests that are specified in Code Case N498-4, Paragraphs (a)(3) and (a)(4).

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RAI No. 2R1-015-3:

In the last two paragraphs on page 5 of Attachment 1 to RR No. 2R1-015, HNP states that the piping segments described in Table 1 will be visually inspected by VT-2 techniques for evidence of leakage "without being pressurized."

Part A

Clarify whether the intent of the justification for relief in RR No. 2R1-015 was to state that the VT-2 visual examinations of the piping segments in Table 1 of the relief request would be performed with systems pressurized to the normal operating pressures for the systems as configured to the normal system configuration required for containment isolation in Mode 3.

Part B

For each of the following component groupings listed below and discussed on pages A1-4 and A1-5 of RR No. 2R1-015, identify the system test pressures and temperatures that will be used to perform the proposed alternative pressure test on the ASME Code Class 1 piping segments that are located between first and second containment isolation valves in the systems, as configured to the normal system configuration required for containment isolation in Mode 3.

"Larger Size Class 1 Piping Segments: *12 Inch Residual Heat Removal Motor Operated Valves"*

"Larger Size Class 1 Piping Segments: *Safety Injection Loops Low Head Check Valves 1SI-250, 252, & 254 and Upstream Piping Segments"*

"Larger Size Class 1 Piping Segments: *Safety Injection Loops High Head Check Valves 1SI-81, 82, 83, 136, 137, & 138 and Upstream Piping"*

Part C

Page A1 -3 provides the technical bases for hardship for the "Small Size Class 1 Vent, Drain, Test, and Fill Lines" that are within the scope of RR No. 2R1-015. The staff is of the understanding that some of or all of the Class 1 vent lines, drain lines, test lines, or fill lines may not be pressurized past the first containment isolation valves in the piping segments, particularly if the lines are configured with a cap or blind flange that represents the second containment isolation component in lieu of a

second containment isolation valve. Should this be the case, amend the relief request to identify those Class 1 vent lines, drain lines, test lines, or fill lines that are subject to this configuration/pressurization condition. If any of the ASME Code Class 1 drain lines, vent lines, fill lines, or test lines will be pressurized past the first isolation valve to some percentage of the nominal operating pressure for the RCPB, identify what the alternative test pressure will be for the pressure testing of the applicable piping segments, as configured to the normal system configuration required for containment isolation in Mode 3.

The staff notes that RNP Serial Letter No. RNP-RA/02-0065 (ADAMS Accession Number ML0213600170, May 14, 2005), in part, provided an amended technical basis for requesting relief from performing the required hydrostatic pressure tests of the ASME Code Class 1 vent lines, drain lines, test lines, and fill lines at the H.B. Robinson Nuclear Plant. If the precedent set in Serial Letter No. RNP-RA/02-0065 for the ASME Code Class 1 vent lines, drain lines, test lines, and fill lines at Robinson is applicable to any of the corresponding ASME Code Class 1 vent lines, drain lines, test lines, and fill lines at SHNP-1, the staff recommends that a similar basis be included in "Reason and Justification for Requesting Relief" Section of RR 2R1-015, as applicable to the bases for the "Small Size Class 1 Vent, Drain, Test, and Fill Lines."

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Response:

Part A

HNP confirms that the intent of the justification for relief in RR No. 2R1-015 was to state that the VT-2 visual examinations of the piping segments in Table 1 of the relief request would be performed with various Class 1 systems pressurized to the normal operating pressures for the systems in Mode 3, as configured to the normal system configuration required for Containment isolation.

Part B

For each of the following component groupings listed below and discussed on pages A1-4 and A1-5 of RR No. 2R1-015, the system test pressures and temperatures that will be used to perform the proposed alternative pressure test on the ASME Code Class 1 piping segments that are located between first and second containment isolation valves in the systems, as configured to the normal system configuration required for containment isolation in Mode 3 are as follows:

"Larger Size Class 1 Piping Segments: *12 Inch Residual Heat Removal Motor Operated Valves"*

Prior to the Mode 3 pressure test, the RHR system will have been in service. When RHR is removed from service prior to reaching Mode 3, the piping system will be at an elevated temperature and pressure condition. When the RHR motor operated valves are closed for retiring the RHR system, the elevated temperature and pressure will be contained between the valves. This is the condition of the piping in the normal system configuration for Mode 3 and the proposed alternate pressure test. The expected pressures and temperatures are 325-360 psig and 300-350°F.

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"Larger Size Class 1 Piping Segments: *Safety Injection Loops Low Head Check Valves 1SI-250, 252, & 254 and Upstream Piping Segments"*

The Safety Injection Low Head Check Valves will check normal RCS pressure upstream. The Safety Injection Accumulators are aligned to the subject piping during Mode 3. Thus, the piping segments between the first and second isolation valves will be exposed to the safety accumulator pressure which is 585 to 665 psig. The temperature will be at ambient containment temperature and is maintained below 120°F.

"Larger Size Class 1 Piping Segments:"

"Cold Leg Safety Injection Loops High Head Check Valves 1SI-81, 82, & 83 and Upstream Piping"

Prior to the Mode 3 pressure test, the RHR system will have been in service. When RHR is removed from service prior to reaching Mode 3, the piping system will be at an elevated temperature and pressure condition. This is the condition of the piping in the normal system configuration for Mode 3 and the proposed alternate pressure test. The expected pressures and temperatures are 325-360 psig and 300-350°F.

"Hot Leg Safety Injection Loops High Head Check Valves 1SI-136, 137, & 138 and Upstream Piping"

Flow is not established through the piping systems of the listed check valves during ascension to Mode 3 and/or Mode 3. Thus, the piping is at elevation head pressure and ambient containment temperature which is maintained below 120°F.

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Part C

Unlike, H.B. Robinson, HNP does not have any small size vent, drain, test, or fill lines that are configured with a cap or blind flange that represents the second containment isolation valve. The vent, drain, test and fill lines at HNP are configured with two small isolation valves in series. The leakage test will not specifically pressurize past the first isolation valve for this inspection. No external or visible leakage will be allowed for the test to be successful. Since this type of test will assure that the combined first and second isolation valves are effective in maintaining the reactor coolant pressure boundary at normal operating temperature and pressure, the increase in safety achieved from the Code-required leakage test is not commensurate with the hardship of performing such testing.

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RAI No. 2RI-015-4:

Confirm that there are no ASME Code Class 1 pumps in the piping segments that are within the scope of RR No. 2R1-015. If any of these piping segments are designed with a pump or pumps, amend RR No. 2R1-015 to include Inspection Item B15.61 as an additional Section XI inspection item from which relief is requested.

Response:

HNP confirms that none of the piping segments specified in RR No. 2R1-015 include any ASME Code Class 1 pumps.

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AMENDED SECTIONS OF TABLE 1 FOR
RELIEF REQUEST 2R1-015 (HNP-05-128)

TABLE 1: RELIEF REQUEST NUMBER 2R1-015 AFFECTED CLASS 1 PRESSURE RETAINING COMPONENTS – EXAMINATION CATEGORY B-P					
Affected Line or Component	Pipe Diameter (in.)	Pipe Schedule	Approx Length (ft.)	Drawing No.	Boundary Exception(s)
Norm Charging Line Upstream CV and Test Connection Isolation Valve	3*	SCH 160, A-376 TP304	≤ 1 ft.	2165-S-1303 2165-G-803 2165-G-137 2165-G-139	Check valve to remain closed to avoid disassembly or other temporary configurations required to achieve test pressures at upstream piping and valves 1CS-500 and 1CS-497
	1		1.5 ft.		Valve 1CS-498 remains closed to avoid pressurizing downstream Class 1 pipe and valve 1CS-499
Alt Charging Line Upstream CV and Test Connection Isolation Valve	3*	SCH 160, A-376 TP304	≤ 1 ft.	2165-S-1303 2165-G-803 2165-G-137 2165-G-139	Check valve to remain closed to avoid disassembly or other temporary configurations required to achieve test pressures at upstream piping and valves 1CS-486 and 1CS-483
	1		1.5 ft.		Valve 1CS-484 remains closed to avoid pressurizing downstream Class 1 pipe and valve 1CS-485
RCS Loop to RHR Pump "B" Isolation and Drain Line	12	SCH 140S, A-376 TP316	86	2165-S-1324 2165-G-824 2165-G-155	Valves 1RH-39 and 1RH-40 remain closed to avoid over-pressurization of the RHR system
	1	SCH 160S*, A-376 TP316*	2		Valve 1RH-41 remains closed to avoid pressurizing downstream Class 1 pipe and valve 1RH-42
RCS Loop to RHR Pump "A" Isolation and Drain Line	12	SCH 140S, A-376 TP316	86	2165-S-1324 2165-G-824 2165-G-155	Valves 1RH-1 and 1RH-2 remain closed to avoid over-pressurization of the RHR system
	1	SCH 160S*, A-376 TP316*	2		Valve 1RH-3 remains closed to avoid pressurizing downstream Class 1 pipe and valve 1RH-4

* Values revised from previous submittal (HNP-05-128 dated November 18, 2005)