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CP&L

Carolina Power & Light Company

DEC 0 4 1987

SERIAL: NLS-87-274

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
IN-SERVICE PUMP AND VALVE TESTING (IST) PROGRAM

Gentlemen:

On October 30, 1987, Carolina Power & Light Company (CP&L) submitted a code relief request regarding testing of the Reactor Coolant System (RCS) vent valves during refueling rather than quarterly. Based on further review, CP&L has determined that these valves can be tested on a cold shutdown basis. Therefore, CP&L herein rescinds the October 30, 1987 relief request and submits as a supplement to Revision 3 of the IST program, the attached "cold shutdown justification" to support testing the vent valves at cold shutdown. It is CP&L's intent to incorporate this change into the IST program, effective December 22, 1987. Thereafter, the valves will be tested in accordance with ASME Code requirements at cold shutdown [Ref. IWV-3410 and IWV-3412 (a)]. The attached cold shutdown justification is provided for your review.

The RCS High Point Vents are required by NUREG-0737, "Clarification of TMI Action Plan Requirements, Item II.B.1." As required by NUREG 0737, these valves provide a means to vent noncondensible gases from the RCS which may inhibit core cooling during natural circulation. The scenarios for which these valves would be used are beyond the design basis of the plant. Use of these valves is covered by emergency operating procedures as required by NUREG-0737. Also, as required by NUREG-0737, the vents must not lead to an unacceptable increase in the probability of a loss-of-coolant accident and must be designed to ensure a low probability of inadvertent or irreversible actuation. The SHNPP design (refer to attached Figure) consists of six solenoid-actuated, pilot-operated valves. The valves are normally closed and provide a double RCS barrier. The valves vent to the containment or the Pressurizer Relief Tank (PRT). The only routine use of the valves occurs during fill and vent of the RCS.

Technical Specification 3.4.11 requires that one vent path from the reactor pressure vessel head and one vent path from the pressurizer be operable and closed during operation. Technical Specification 4.4.11.2.a requires testing of the vent valves every 18 months. The In-service Testing program required by Technical Specification 4.0.5 requires testing of these valves quarterly. Testing of the valves with the RCS pressurized could result in a limited but uncontrolled blowdown should the associated upstream or downstream valve fail, inadvertently open, or experience excessive leakage during testing. The result would be a loss of RCS inventory to the pressurizer relief tank or containment atmosphere in excess of Technical Specification 3.4.6.2.d limits, possibly resulting in unit shutdown.

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Testing at power (i.e., with the RCS pressurized) has demonstrated that a scenario exists by which the block valves can be forced open during testing of the upstream vent valve(s). This is due to a combination of valve test sequencing, timing, and the particular characteristics of the valve's fluid-assisted operation.

This scenario has been addressed by an orientation change of the block valves and changes in the test procedure. These changes will improve the reliability of these valves by: 1) reducing the time necessary to fully reseat the valve discs and 2) by not challenging the valves before the discs are fully reseated.

Given that these valves are not assumed to operate in design basis accidents and the potential consequences of testing them at full system pressure, testing of these valves at power is contrary to both the goal of maintaining double isolation of the RCS and the NUREG-0737 requirement to ensure a low probability of inadvertent or irreversible actuation of the valves. For the above reasons, testing these valves in Modes 1-4 is impractical.

If you have any questions please contact Steven D. Chaplin at (919) 836-6623.

Yours very truly,

S. R. Zimmerman
Manager
Nuclear Licensing Section

SDC/bmc (5347SDC)

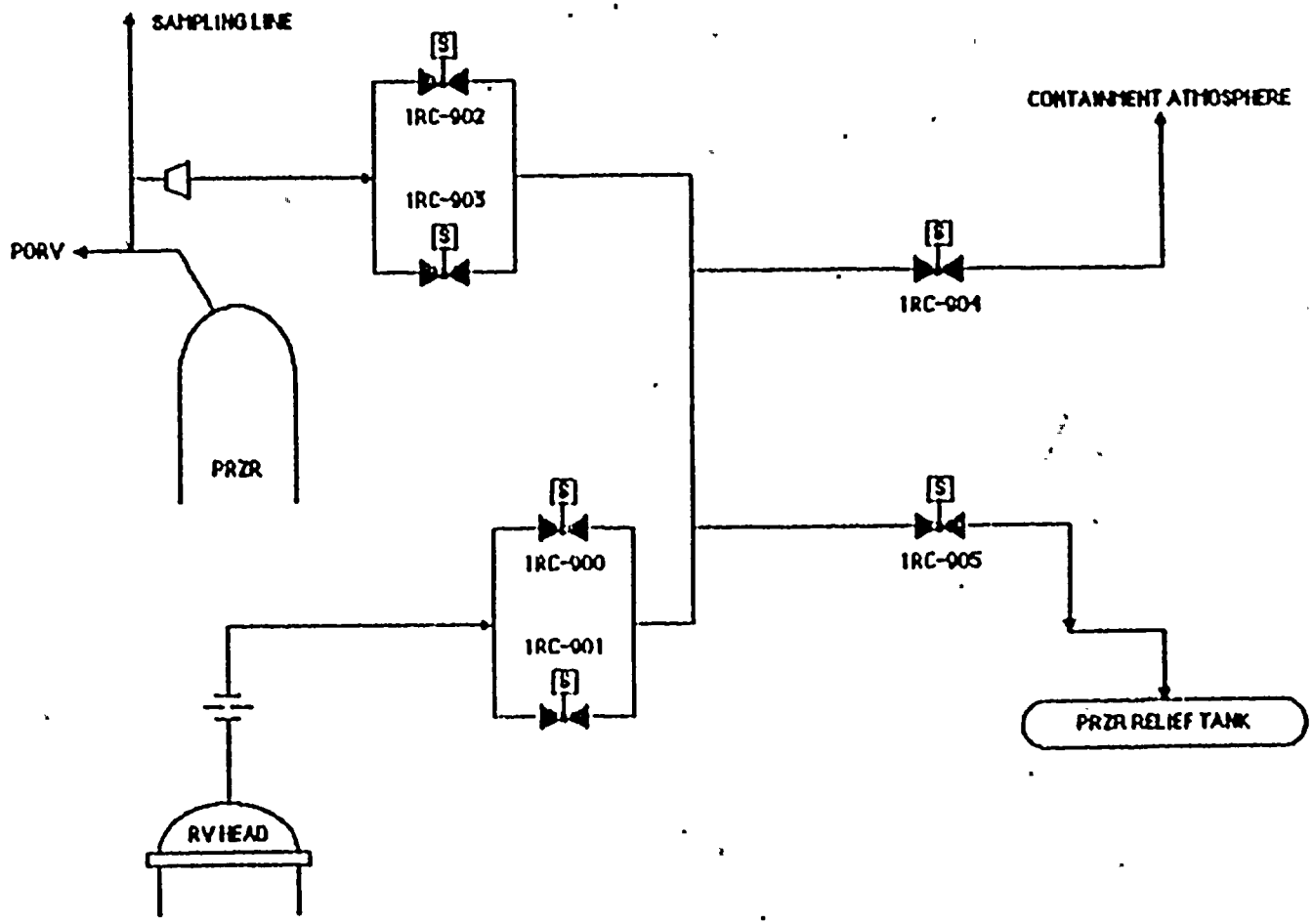
Attachment

cc: Mr. B. C. Buckley
Dr. J. Nelson Grace
Mr. G. F. Maxwell

COLD SHUTDOWN TEST JUSTIFICATION

System:	Reactor Coolant CS-2
Valves:	IRC-900, 901, 902, 903, 904, 905
Category:	B
Class:	2
Function:	RCS Vent Valves
Test Requirement:	Exercise valve for operability, observe proper operation of fail-safe actuator and measure stroke time quarterly.
Cold Shutdown Justification:	Valves are RCS High Point Vent Valves, which were installed in response to NUREG 0737, Item II.B.1 and are designed only to vent noncondensible gas produced by a "beyond design basis accident" from the RCS. These valves are only routinely used during cold shutdown to provide a path for normal RCS venting prior to heatup. Technical Specification 3.4.11 requires that one vent path from the reactor pressure vessel head and one vent path from the pressurizer be operable and closed during operation. Technical Specifications requires testing of the vent valves every 18 months. Testing of the valves during power operations could result in a limited but uncontrolled blowdown should the associated upstream or downstream valve fail, inadvertently open, or experience excessive leakage. The result would be a loss of RCS inventory to the pressurizer relief tank or containment atmosphere in excess of Technical Specification 3.4.6.2.d limits, possibly resulting in unit shutdown.
Quarterly Part Stroke Testing:	None. These valves are not equipped with part stroke exercisers.
Alternate Test:	Exercise valve for operability, observe proper operation of fail-safe actuators, and measure stroke time during a cold shutdown, if not performed within the previous 92 days.

(5347SDC/bmc)


SAMPLING LINE
1RC-902
1RC-903
CONTAINMENT ATMOSPHERE
PORV
1RC-904
PRZR
1RC-900
1RC-905
1RC-901
PRZR RELIEF TANK
RV HEAD

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ZIMMERMAN, S. R. Carolina Power & Light Co.
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SUBJECT: Forwards cold shutdown test justification submitted as supl to Rev 3 of in-service pump & valve testing program to support testing vent valves at cold shutdown.

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