CP&L
A Progress Energy Company

James Scarola
Vice President
Harris Nuclear Plant

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

SERIAL: HNP-00-171
10CFR50.90

DEC 1 9 2000

SHEARON HARRIS NUCLEAR POWER PLANT
DOCKET NO. 50-400/LICENSE NO. NPF-63
REQUEST FOR LICENSE AMENDMENT
TECHNICAL SPECIFICATIONS 3/4.9.2

Dear Sir or Madam:

In accordance with the Code of Federal Regulations, Title 10, Part 50.90, Carolina Power & Light Company (CP&L) requests a revision to the Technical Specifications (TS) for the Harris Nuclear Plant (HNP). The proposed amendment revises Technical Specifications (TS) 3/4. 9.2 "Refueling Operations - Instrumentation", and associated Bases. Specifically, HNP proposes to revise the applicable TS to provide an alternate method of monitoring neutron flux during refueling operations.

Enclosure 1 provides a description of the proposed changes and the basis for the changes. Enclosure 2 details, in accordance with 10 CFR 50.91(a), the basis for CP&L's determination that the proposed changes do not involve a significant hazards consideration. Enclosure 3 provides an environmental evaluation which demonstrates that the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental assessment is required for approval of this amendment request. Enclosure 4 provides page change instructions for incorporating the proposed revisions. Enclosure 5 provides the proposed Technical Specification pages.

In accordance with 10 CFR 50.91(b), CP&L is providing the State of North Carolina with a copy of the proposed license amendment.

CP&L requests that the proposed amendment be issued such that implementation will occur within 60 days of issuance to allow time for procedure revision and orderly incorporation into copies of the Technical Specifications.

Please refer any questions regarding this submittal to Mr. E. A. McCartney at (919) 362-2661.

Sincerely,

James Scarola

James Scarola

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New Hill, NC 27562

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A001

MSE/mse

Enclosures:
1. Basis for Change Request
2. 10 CFR 50.92 Evaluation
3. Environmental Considerations
4. Page Change Instructions
5. Technical Specification Pages

James Scarola, having been first duly sworn, did depose and say that the information contained herein is true and correct to the best of his information, knowledge and belief, and the sources of his information are employees, contractors, and agents of Carolina Power & Light Company.

Darlene S. Yarborough

Notary (Seal)
My commission expires: 2-21-2005

DARLENE S. YARBOROUGH
NOTARY
***
PUBLIC
HARNETT COUNTY, NC

c: Mr. J. B. Brady, NRC Sr. Resident Inspector
Mr. Mel Fry, Director, N.C. DEHNR
Mr. R. J. Laufer, NRC Project Manager
Mr. L. A. Reyes, NRC Regional Administrator

ENCLOSURE 1 TO SERIAL: HNP-00-171

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BASIS FOR CHANGE REQUEST

Background

On August 20, 1993, the NRC issued amendment numbers 175 and 55 to Beaver Valley Power Station Units 1 and 2 respectively. These amendments permitted the use of alternate source range monitors during refueling operations provided the required visual and audible indications are available.

On October 30, 1989, the NRC issued amendment numbers 46 and 45 to the Diablo Canyon Power Plant, Units 1 and 2 respectively. This amendment allowed the use of a temporary source range detector during refueling if one of the two permanently installed excore source range detectors fails.

Harris Nuclear Plant Source Range Nuclear Flux Monitor inoperability has previously delayed refueling activities. The proposed change would permit using alternate installed detectors or temporary source range detectors during refueling operations instead of the two Source Range Nuclear Flux Monitors specified in current Harris Nuclear Plant Technical Specifications.

Proposed Change

Harris Nuclear Plant (HNP) proposes revising Technical Specification (TS) 3/4.9.2 "Refueling Operations – Instrumentation" and associated Bases to permit using alternate installed detectors or temporary source range detectors instead of the two Source Range Nuclear Flux Monitors specified in the current HNP Technical Specifications.

Basis

Two operable source range monitors are required in Mode 6. The function of the source range monitors is to provide direct neutron flux monitoring of the core to detect changes in core reactivity, which could potentially result in a loss of the required shutdown margin. One monitor provides the required continuous audible and visual indications in containment and in the control room while the redundant monitor provides continuous indication in the control room.

The HNP accident analyses do not credit operation of source range neutron flux monitors (SRNFM) in Mode 6 to mitigate the consequences of a boron dilution accident or an inadvertent loading and operation of a fuel assembly in an improper position. As stated generically in NUREG-1431, Revision 1, "The need for a safety analysis for an uncontrolled boron dilution accident is eliminated by isolating all unborated water sources as required by LCO 3.9.2, "Unborated Water Source Isolation Valves." Specifically for HNP, FSAR Section 15.4.6.3, states that no analysis was performed for a boron dilution event for Mode 6, since administrative controls are in place to prevent an uncontrolled boron dilution while the unit is in the refueling mode. Likewise, SRNFM are not credited for an inadvertent loading and operation of a fuel assembly in an improper position.

HNP is proposing to permit a Wide Range Neutron Flux Monitor (WRNFM) or a temporary source range monitor to use as an alternate for an inoperable SRNFM. The WRNFM provide the same level of quality assurance, redundancy, and necessary display range as the SRNFM. The WRNFM detector has a neutron sensitivity of 1.0 cps/nv, whereas the SRNFM detector sensitivity is 10 cps/nv. This difference in sensitivity is acceptable since the purpose of the detectors is to monitor trends in neutron flux, which can be accomplished with the visible indication on the WRNFM channel. A WRNFM channel (SR Indicator) is required to be operable per TS 3/4.3.3.5 "Remote Shutdown System" in Modes 1-3. The function of the WRNFM for TS 3/4.3.3.5 is to monitor the core reactivity in a shutdown condition, which is also the function of the SRNFM in Mode 6. Therefore, there are no potential adverse consequences of using a WRNFM in place SRNFM.

Additionally, HNP proposes to change TS 3/4.9.2 to permit using a portable monitor with the accuracy and sensitivity required to adequately monitor changes in the core reactivity condition during refueling activities. This portable monitor will be connected (if necessary) to provide the required indications in the control room and containment.

HNP will commit to and document in the Bases that if an alternate source range monitor is used other than the SRNFM, then the alternate source range monitor will be powered from a separate power supply than the redundant operable source range monitor. Additionally, the core position of the detectors for the two operable source range monitors and the loading/unloading pattern of the fuel will be such that detector capability is optimized.

The proposed change will not affect the ability to monitor reactivity in the core. The required shutdown margin will continue to be maintained and the source range monitors will continue to provide the required visual indication in the control room along with audible indication in containment and the control room.

Conclusion

The HNP accident analyses do not credit operation of source range neutron flux monitors in Mode 6 to mitigate the consequences of a boron dilution accident or an inadvertent loading and operation of a fuel assembly in an improper position. The proposed change will maintain the required indication in containment and the control room. HNP will incorporate administrative controls in the Bases of TS to stipulate power supply requirements, detector positioning, and loading/unloading pattern requirements to ensure that applicable neutron flux monitors are capable of performing their intended function.

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10 CFR 50.92 EVALUATION

The Commission has provided standards in 10 CFR 50.92(c) for determining whether a significant hazards consideration exists. A proposed amendment to an operating license for a facility involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the possibility of a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in a margin of safety. Carolina Power & Light Company has reviewed this proposed license amendment request and determined that its adoption would not involve a significant hazards determination. The bases for this determination are as follows:

Proposed Change

Harris Nuclear Plant (HNP) proposes revising Technical Specification (TS) 3/4.9.2 "Refueling Operations – Instrumentation" and associated Bases to permit using alternate installed detectors or temporary source range detectors instead of the two Source Range Nuclear Flux Monitors specified in the current HNP Technical Specifications.

Basis

This change does not involve a significant hazards consideration for the following reasons:

1. The proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

   This change only involves reactor core monitoring requirements during Mode 6. These monitoring requirements are not credited for accident mitigation. Alternate monitors will be provided with the accuracy and sensitivity required to adequately monitor changes in the core reactivity levels during refueling activities. Neutron Flux monitors are for indication only and do not interface with other structures, systems, or components that might initiate an accident.

   Therefore, the proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. The proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

   Neutron Flux monitors are for indication only and do not interface with other structures, systems, or components that might initiate an accident. The proposed change will not modify plant systems or operate plant components such that a new or different accident scenario is created.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. The proposed amendment does not involve a significant reduction in the margin of safety.

Similar changes, to the proposed change, have been approved at the Beaver Valley Power Station and the Diablo Canyon Power Plant. The proposed change will maintain adequate monitoring of core reactivity in Mode 6. The proposed change maintains requirements for two operable neutron flux monitors. Neutron flux monitors are not credited in the HNP accident analyses for accident mitigation in Mode 6.

Therefore, the proposed change does not involve a significant reduction in the margin of safety.

ENCLOSURE 3 TO SERIAL: HNP-00-171

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ENVIRONMENTAL CONSIDERATIONS

10 CFR 51.22(c)(9) provides criterion for and identification of licensing and regulatory actions eligible for categorical exclusion from performing an environmental assessment. A proposed amendment to an operating license for a facility requires no environmental assessment if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant hazards consideration; (2) result in a significant change in the types or significant increase in the amounts of any effluents that may be released offsite; (3) result in a significant increase in individual or cumulative occupational radiation exposure. Carolina Power & Light Company has reviewed this request and determined that the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of the amendment. The basis for this determination follows:

Proposed Change

Harris Nuclear Plant (HNP) proposes revising Technical Specification (TS) 3/4.9.2 "Refueling Operations – Instrumentation" and associated Bases to permit using alternate installed detectors or temporary source range detectors instead of the two Source Range Nuclear Flux Monitors specified in the current HNP Technical Specifications.

Basis

The change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) for the following reasons:

1. As demonstrated in Enclosure 2, the proposed amendment does not involve a significant hazards consideration.

2. The proposed amendment does not result in a significant change in the types or increase in the amounts of any effluents that may be released offsite.

   The change does not introduce any new effluents or significantly increase the quantities of existing effluents. As such, the change cannot significantly affect the types or amounts of any effluents that may be released offsite.

3. The proposed amendment does not result in a significant increase in individual or cumulative occupational radiation exposure.

   The proposed change adds additional surveillances and physical changes associated with the installation of temporary source range detectors. However, the dose to individuals that install and perform surveillances on the temporary source range detectors are expected to be small. Therefore, the amendment has no significant affect on either individual or cumulative occupational radiation exposure.

ENCLOSURE 4 TO SERIAL: HNP-00-171

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PAGE CHANGE INSTRUCTIONS

Removed Page	Inserted Page
3/4 9-3	3/4 9-3
B3/4 9-1	B3/4 9-1
B3/4 9-2	B3/4 9-2

ENCLOSURE 5 TO SERIAL: HNP-00-171

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TECHNICAL SPECIFICATION PAGES

3/4.9.2 INSTRUMENTATION

Add (primary or alternate)

change

LIMITING CONDITION FOR OPERATION

3.9.2 As a minimum, two Source Range Neutron Flux Monitors shall be OPERABLE, each with continuous visual indication in the control room and one with audible indication in the containment and control room.

APPLICABILITY: MODE 6.

ACTION:

a. With one of the above required monitors inoperable or not operating, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

Delete

b. With both of the above required monitors inoperable or not operating, in addition to Action a. above, immediately initiate actions to restore one source range neutron flux monitor to OPERABLE status and determine the boron concentration of the Reactor Coolant System within 4 hours and once per 12 hours thereafter.

SURVEILLANCE REQUIREMENTS

change

4.9.2 Each Source Range Neutron Flux Monitor shall be demonstrated OPERABLE by performance of:

Delete

a. A CHANNEL CHECK at least once per 12 hours,

b. A CHANNEL CALIBRATION once per 18 months.

Delete

3/4.9.1 BORON CONCENTRATION

The limitations on reactivity conditions during REFUELING ensure that: (1) the reactor will remain subcritical during CORE ALTERATIONS, and (2) a uniform boron concentration is maintained for reactivity control in the water volume having direct access to the reactor vessel. These limitations are consistent with the initial conditions assumed for the boron dilution incident in the safety analyses and are specified in the cycle-specific COLR. The boron concentration limit specified in the COLR ensures that a core K_{eff} of $\leq$ 0.95 is maintained during fuel handling operations. The administrative controls over the required valves during refueling operations precludes the possibility of uncontrolled boron dilution of the filled portion of the RCS. This action prevents flow to the RCS of unborated water by closing flow paths from sources of unborated water.

3/4.9.2 INSTRUMENTATION

The OPERABILITY of the Source Range Neutron Flux Monitors ensures that redundant monitoring capability is available to detect changes in the reactivity condition of the core. Insert A

3/4.9.3 DECAY TIME - DELETED

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

The requirements on containment building penetration closure and OPERABILITY ensure that a release of radioactive material within containment will be restricted from leakage to the environment. The OPERABILITY and closure restrictions are sufficient to restrict radioactive material release from a fuel element rupture based upon the lack of containment pressurization potential while in the REFUELING MODE. Penetrations applicable to Technical Specification 3.9.4.b and 3.9.4.c may be opened provided the following administrative controls are in effect:

1. An individual or individuals shall be designated and available at all times, capable of isolating the breached penetration.

2. The breached penetrations shall not be obstructed unless capability for rapid removal of obstructions is provided (such as quick disconnects for hoses).

3. For the Personnel Air Lock, at least one door must be capable of being closed and secured.

4. Only penetrations that communicate between the Reactor Containment Building atmosphere and the Reactor Auxiliary Building Ventilation System atmosphere are permitted to be open under these administrative controls.

Containment penetrations that provide direct access from containment atmosphere to administrative outside atmosphere must be isolated, or capable of isolation via ~~adminstratvie~~ delete controls, on at least one side of containment. Isolation may be achieved by an OPERABLE automatic isolation valve, or by a manual isolation valve, blind flange, or equivalent. Equivalent isolation methods include use of a material that can provide a temporary, atmospheric pressure, ventilation barrier for the other containment penetrations during fuel movement.

3/4.9.5 COMMUNICATIONS - DELETED

Delete

Insert A

Suitable monitors used in place of primary source range neutron flux monitors (N31 and N32) are recognized as alternate monitors. Alternate monitors may be used in place of the primary monitors provided the required indication is maintained and the alternate source range monitor is powered from a separate power supply than the redundant operable source range monitor. Additionally, the core position of the detectors for the two operable source range monitors and the loading/unloading pattern of the fuel be such that detector capability is optimized.

3/4.9.6 REFUELING MACHINE - DELETED

Delete (1) (1)

3/4.9.7 CRANE TRAVEL - FUEL HANDLING BUILDING - DELETED

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

The requirement that at least one residual heat removal (RHR) loop be in operation ensures that: (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor vessel below 140°F as required during the REFUELING MODE, and (2) sufficient coolant circulation is maintained through the core to minimize the effect of a boron dilution incident and prevent boron stratification.

The requirement to have two RHR loops OPERABLE when there is less than 23 feet of water above the reactor vessel flange ensures that a single failure of the operating RHR loop will not result in a complete loss of residual heat removal capability. With the reactor vessel head removed and at least 23 feet of water above the reactor pressure vessel flange, a large heat sink is available for core cooling. Thus, in the event of a failure of the operating RHR loop, adequate time is provided to initiate emergency procedures to cool the core.

The minimum RHR flow requirement is reduced to 900 gpm when the reactor water level is below the reactor vessel flange. The 900 gpm limit reduces the possibility of cavitation during operation of the RHR pumps and ensures sufficient mixing in the event of a MODE 6 boron dilution incident.

3/4.9.9 CONTAINMENT VENTILATION ISOLATION SYSTEM

The OPERABILITY of this system ensures that the containment purge makeup and exhaust penetrations will be automatically isolated upon detection of high radiation levels within the containment. The OPERABILITY of this system is required to restrict the release of radioactive material from the containment atmosphere to the environment.

Delete Add

3/4.9.2 INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.9.2 As a minimum, two source range neutron flux monitors (primary or alternate) shall be OPERABLE, each with continuous visual indication in the control room and one with audible indication in the containment and control room.

APPLICABILITY: MODE 6.

ACTION:

a. With one of the above required monitors inoperable or not operating, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

b. With both of the above required monitors inoperable or not operating, in addition to Action a. above, immediately initiate actions to restore one source range neutron flux monitor to OPERABLE status and determine the boron concentration of the Reactor Coolant System within 4 hours and once per 12 hours thereafter.

SURVEILLANCE REQUIREMENTS

4.9.2 Each source range neutron flux monitor shall be demonstrated OPERABLE by performance of:

a. A CHANNEL CHECK at least once per 12 hours,

b. A CHANNEL CALIBRATION once per 18 months.

3/4.9.1 BORON CONCENTRATION

The limitations on reactivity conditions during REFUELING ensure that: (1) the reactor will remain subcritical during CORE ALTERATIONS, and (2) a uniform boron concentration is maintained for reactivity control in the water volume having direct access to the reactor vessel. These limitations are consistent with the initial conditions assumed for the boron dilution incident in the safety analyses and are specified in the cycle-specific COLR. The boron concentration limit specified in the COLR ensures that a core K_{eff} of $\leq$ 0.95 is maintained during fuel handling operations. The administrative controls over the required valves during refueling operations precludes the possibility of uncontrolled boron dilution of the filled portion of the RCS. This action prevents flow to the RCS of unborated water by closing flow paths from sources of unborated water.

3/4.9.2 INSTRUMENTATION

The OPERABILITY of the Source Range Neutron Flux Monitors ensures that redundant monitoring capability is available to detect changes in the reactivity condition of the core. Suitable monitors used in place of primary source range neutron flux monitors (N31 and N32) are recognized as alternate monitors. Alternate monitors may be used in place of the primary monitors provided the required indication is maintained and the alternate source range monitor is powered from a separate power supply than the redundant operable source range monitor. Additionally, the core position of the detectors for the two operable source range monitors and the loading/unloading pattern of the fuel be such that detector capability is optimized.

3/4.9.3 DECAY TIME - DELETED

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

The requirements on containment building penetration closure and OPERABILITY ensure that a release of radioactive material within containment will be restricted from leakage to the environment. The OPERABILITY and closure restrictions are sufficient to restrict radioactive material release from a fuel element rupture based upon the lack of containment pressurization potential while in the REFUELING MODE. Penetrations applicable to Technical Specification 3.9.4.b and 3.9.4.c may be opened provided the following administrative controls are in effect:

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3. For the Personnel Air Lock, at least one door must be capable of being closed and secured.

4. Only penetrations that communicate between the Reactor Containment Building atmosphere and the Reactor Auxiliary Building Ventilation System atmosphere are permitted to be open under these administrative controls.

Containment penetrations that provide direct access from containment atmosphere to outside atmosphere must be isolated, or capable of isolation via administrative controls, on at least one side of containment. Isolation may be achieved by an OPERABLE automatic isolation valve, or by a manual isolation

CONTAINMENT BUILDING PENETRATIONS (Continued)

valve, blind flange, or equivalent. Equivalent isolation methods include use of a material that can provide a temporary, atmospheric pressure, ventilation barrier for the other containment penetrations during fuel movement.

3/4.9.5 COMMUNICATIONS - DELETED

3/4.9.6 REFUELING MACHINE - DELETED

3/4.9.7 CRANE TRAVEL - FUEL HANDLING BUILDING - DELETED

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

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