DESIGN PRESSURE AND TEMPERATURE

5.2.2 The containment building is designed and shall be maintained for a maximum internal pressure of 45.0 psig and a peak air temperature of 380°F.

5.3 REACTOR CORE

FUEL ASSEMBLIES

5.3.1 The core shall contain 157 fuel assemblies with each fuel assembly containing 264 fuel rods clad with Zircaloy-4. Each fuel rod shall have a nominal active fuel length of 144 inches. The initial core loading shall have a maximum enrichment of 3.5 weight percent U-235. Reload fuel shall be similar in physical design to the initial core loading and shall have a maximum enrichment of 4.2 weight percent U-235.

Insert: nominally

CONTROL ROD ASSEMBLIES

5.3.2 The core shall contain 52 shutdown and control rod assemblies. The shutdown and rod assemblies shall contain a nominal 142 inches of absorber material. The nominal values of absorber material shall be 80% silver, 15% indium, and 5% cadmium, or 95% hafnium with the remainder zirconium. All control rods shall be clad with stainless steel tubing.

5.4 REACTOR COOLANT SYSTEM

DESIGN PRESSURE AND TEMPERATURE

5.4.1 The Reactor Coolant System is designed and shall be maintained:

a. In accordance with the Code requirements specified in Section 5.2 of the FSAR, with allowance for normal degradation pursuant to the applicable Surveillance Requirements,

b. For a pressure of 2485 psig, and

c. For a temperature of 650°F, except for the pressurizer which is 680°F.

VOLUME

5.4.2 The total water and steam volume of the Reactor Coolant System is 9410± 100 cubic feet at a nominal T_{avg} of 588.8°F.

5.5 METEOROLOGICAL TOWER LOCATION

5.5.1 The meteorological station shall be located as shown on Figure 5.1-1.

Insert

except that substitution of fuel rods by filler rods consisting of Zircaloy-4, stainless steel, or by vacancies may be made in fuel assemblies if justified by a cycle specific evaluation. Should more than a total of 30 fuel rods or more than 10 fuel rods in any one assembly be replaced per refueling a Special Report describing the number of rods replaced will be submitted to the Commission, pursuant to Specification 6.9.2, within 30 days after cycle startup.

ENCLOSURE 2

SHEARON HARRIS NUCLEAR POWER PLANT
NRC DOCKET NO. 50-400
OPERATING LICENSE NPF-63
REQUEST FOR LICENSE AMENDMENT

10CFR50.92 EVALUATION
D-BANK RECONFIGURATION - CONTROL ROD INSERTION LIMITS

The Commission has provided standards in 10CFR50.92(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 consideration. The bases for this determination are as follows:

Proposed Change

SHNPP Cycle 2 is a transition cycle from a high leakage initial core loading designed to support load follow operation to a low leakage reload fuel cycle designed to support a base load plant. The benefits CP&L expects from this planned fuel cycle strategy are reduced vessel fluence, increased capacity factor, greater ease and simplicity of operation, and reduced fuel cycle cost. The proposed amendment is one of a series of Technical Specification changes required to support this transition.

The proposed amendment revises Technical Specification Figure 3.1-1, Rod Group Insertion Limits Versus Thermal Power Three-Loop Operation, as shown on the proposed revised Technical Specification pages, to accommodate an eight rod Control Bank D configuration. The proposed eight rod Control Bank D has been shown to reduce radial power peaking at the rod insertion limits and provides the plant operators with improved reactivity control to deal with operating transients. In addition, Technical Specification Figure 3.1-1 has been administratively renumbered to Figure 3.1-2 in conjunction with a new Figure 3.1-1 proposed via the "Boron Dilution/Sliding Shutdown Margin" change.

Basis

The 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. Currently, Control Bank D consists of four Rod Cluster Control Assemblies (RCCAs) located near the core periphery. During the upcoming SHNPP refueling outage, the four RCCAs located near the core center which currently comprise Shutdown Bank D will be combined into Control Bank D and Shutdown Bank D will no longer exist. The limits shown on the Rod Group Insertion Limits Versus Thermal Power figure have been revised, using NRC approved methodology from WCAP 9273-A, to establish new limits which ensure that with the eight rod Control Bank D configuration: (1) power distributions are maintained within current limits; (2) the minimum shutdown margin for power operation (Modes 1 and 2) remains the same as that for SHNPP Cycle 1 operation; and (3) the potential effects of rod misalignment, including rod ejections and rod withdrawal, on associated accident analyses are limited as discussed herein.

   The addition of the four Shutdown Bank D rods to Control Bank D returns SHNPP to an eight rod configuration as was approved in the SHNPP PSAR. The eight rod Control Bank D is the generic configuration for Westinghouse 3-loop 17 x 17 design plants. The Commission has previously approved this eight rod configuration at other facilities such as V. C. Summer, J. M. Farley Units 1 and 2, and Beaver Valley Units 1 and 2. This generic configuration provides for a more uniform control of the core radial power distribution as control rods are inserted. Since the total integral worth of the revised rod insertion limits is comparable to Cycle 1, the worth of any single inserted RCCA at power is reduced because the worth is distributed over twice the number of RCCAs. The probability and consequences of previously evaluated rod worth accidents at SHNPP will now be comparable to that at other Commission accepted eight rod Control Bank D plants.

   The addition of four rods to Control Bank D decreases the probability of a rod ejection event at hot zero power because fewer rods are allowed in the core by the proposed rod insertion limits at zero percent power than are allowed by the existing Technical Specification. At full power the probability of a rod ejection event is increased. Rod ejection is classified as an ANS Condition IV event, that is, an event which is not likely to occur over the lifetime of the plant. This classification is applied to rod ejection at other operating facilities with an eight rod

Control Bank D configuration. Since the eight rod Control Bank D configuration is a generic design for 3-loop 17 x 17 Westinghouse plants, the Commission has previously licensed other facilities with this same configuration, and the rod ejection event remains an ANS Condition IV event, CP&L has determined that the increase in the probability of a rod ejection event at full power is not significant.

The Control Bank D modification does not affect the scram functions of the affected RCCAs. The acceptable scram times for these rods are not different from those currently established. The current assumptions used in the SHNPP FSAR Chapter 15 non-LOCA analyses for shutdown margin, trip reactivity, power distribution limits, ejected and dropped rod worths, post-ejected rod peaking factors, integral rod worths, and differential rod worths were compared with the expected Cycle 2 values for these parameters. It was confirmed that the Cycle 2 values are bounded by those assumed in the current analyses. Therefore, the consequences presented in the SHNPP FSAR for non-LOCA events remain bounding given the new rod insertion limits.

No credit is taken for control rods in the mitigation of a large break LOCA in terms of peak clad temperature or long term cooling. As such, the proposed rod insertion limits have no impact on this analysis. The small break LOCA analysis only models rod insertion in terms of a reactor trip and insertion of all banks. Since the revised rod insertion limits have no impact on the insertion time or reactivity insertion, the proposed amendment does not affect the consequences of a small break LOCA. Based on the above, CP&L has determined that the proposed changes do not increase the consequences of a previously evaluated accident.

The revision to the designation for the Rod Group Insertion Limits Versus Thermal Power figure and associated references is administrative in nature and, as such, can not increase the probability or consequences of an accident previously evaluated.

2. As stated in Item 1, revising the limits in the Rod Group Insertion Limits Versus Thermal Power figure does not alter the method in which any system performs its intended safety function. The eight rod Control Bank D configuration provides for a more uniform control of the core radial power distribution as control rods are inserted. The total integral worth of the revised rod insertion limits is comparable to Cycle 1. Therefore, the proposed amendment does not create the possibility of a new or different kind of accident, including reactivity insertion or withdrawal accidents, from any accident previously evaluated. It should be noted that the eight rod Control Bank D configuration is

identical to generic Westinghouse 3-loop 17 x 17 plant designs and has previously been approved for use at V. C. Summer, J. M. Farley Units 1 and 2, and Beaver Valley Units 1 and 2. The NRC approved safety analyses for these plants do not address any new or different accidents from those currently analyzed for SHNPP.

The revision to the designation for the Rod Group Insertion Limits Versus Thermal Power figure and associated references is administrative in nature and, as such, can 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. Currently, Control Bank D consists of four Rod Cluster Control Assemblies (RCCAs) located near the core periphery. During the upcoming SHNPP refueling outage, the four RCCAs located near the core center which currently comprise Shutdown Bank D will be combined into Control Bank D and Shutdown Bank D will no longer exist. The limits shown on the Rod Group Insertion Limits Versus Thermal Power figure have been revised, using NRC approved methodology from WCAP 9273-A, to establish new limits which ensure that with the eight rod Control Bank D configuration: (1) power distributions are maintained within current limits; (2) the minimum shutdown margin for power operation (Modes 1 and 2) remains the same as that for SHNPP Cycle 1 operation; and (3) the potential effects of rod misalignment, including rod ejections and rod withdrawal, on associated accident analyses are limited as discussed herein.

The addition of the four Shutdown Bank D rods to Control Bank D returns SHNPP to an eight rod configuration as was approved in the SHNPP PSAR. The eight rod Control Bank D is the generic configuration for Westinghouse 3-loop 17 x 17 design plants. The Commission has previously approved this eight rod configuration at other facilities such as V. C. Summer, J. M. Farley Units 1 and 2, and Beaver Valley Units 1 and 2. This generic configuration provides for a more uniform control of the core radial power distribution as control rods are inserted. Since the total integral worth of the revised rod insertion limits is comparable to Cycle 1, the worth of any single inserted RCCA at power is reduced because the worth is distributed over twice the number of RCCAs. The margin of safety at SHNPP will now be comparable to that at other Commission accepted eight rod Control Bank D plants.

The Control Bank D modification does not affect the scram functions of the affected RCCAs. The acceptable scram times for these rods are not different from those currently established. The current assumptions used in the SHNPP FSAR Chapter 15 non-LOCA

analyses for shutdown margin, trip reactivity, power distribution limits, ejected and dropped rod worths, post-ejected rod peaking factors, integral rod worths, and differential rod worths were compared with the expected Cycle 2 values for these parameters. It was confirmed that the Cycle 2 values are bounded by those assumed in the current analyses. Therefore, the conclusions presented in the SHNPP FSAR for non-LOCA events remain bounding given the new rod insertion limits.

No credit is taken for control rods in the mitigation of a large break LOCA in terms of peak clad temperature or long term cooling. As such, the proposed rod insertion limits have no impact on this analysis. The small break LOCA analysis only models rod insertion in terms of a reactor trip and insertion of all banks. Since the revised rod insertion limits have no impact on the insertion time or reactivity insertion, the proposed amendment does not alter the current analysis for a small break LOCA.

Based on the above reasoning, the Company has determined that there is no decrease in the margin of safety as a result of the proposed revision to Control Bank D configuration.

The revision to the designation for the Rod Group Insertion Limits Versus Thermal Power figure and associated references is administrative in nature and, as such, can not reduce the margin of safety.

ENCLOSURE 3

SHEARON HARRIS NUCLEAR POWER PLANT
NRC DOCKET NO. 50-400
OPERATING LICENSE NPF-63
REQUEST FOR LICENSE AMENDMENT

10CFR50.92 EVALUATION
F_Q^T INCREASE FROM 2.28 TO 2.32,
RAOC/BASE LOAD OPERATION, AND F_Q SURVEILLANCE

The Commission has provided standards in 10CFR50.92(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 consideration. The bases for this determination are as follows:

Proposed Change

SHNPP Cycle 2 is a transition cycle from a high leakage initial core loading designed to support load follow operation to a low leakage reload fuel cycle designed to support a base load plant. The benefits CP&L expects from this planned fuel cycle strategy are reduced vessel fluence, increased capacity factor, greater ease and simplicity of operation and reduced fuel cycle cost. The proposed amendment is one of a series of Technical Specification changes required to support this transition.

The proposed amendment provides an increase in the F_Q^T limit and allows an alternate means for the operators to ensure that the F_Q^T limit is not exceeded during routine operational maneuvers. The proposed changes involve: (1) increasing the Heat Flux Hot Channel Factor, F_Q^T, in Technical Specification 3.2.2; (2) revising the Local Axial Penalty Function, K(z), in Technical Specification Figure 3.2-2; (3) replacing the existing Constant Axial Offset Control (CAOC) procedures of Technical Specification Section 3/4.2.1 with a combined Relaxed Axial Offset Control (RAOC)/Base Load operating strategy; (4) replacing the existing F_{xy} Surveillance of Technical Specification 4.2.2.1 with a F_Q Surveillance; (5) revising the f(ΔI) reset function in Technical Specification Table 2.2-1; and (6) revising Technical Specification 6.9.1.6, which delineates the content and schedule requirements of the Radial Peaking Factor Limit Report.

Basis

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

1. The proposed increase in the F_Q^T limit and the associated change in the K(z) Local Axial Penalty Function do not increase the probability of an accident previously evaluated because they do not affect any systems or equipment which are involved in the initiation or mitigation of any previously analyzed accident and, as such, can not increase the probability of any accident previously evaluated. Operation with the proposed increase in the F_Q^T limit and the associated change in the K(z) Local Axial Penalty Function does not result in an increase in the radiological consequences resulting from non-LOCA, overpower transients or small break LOCA events. The current SHNPP FSAR accident analyses for non-LOCA, overpower transients and small break LOCA assume an F_Q^T limit of 2.32 or greater which bounds the proposed value of 2.32. The Large break LOCA event has been reanalyzed by Westinghouse. This analysis was performed using the NRC approved BASH computer code. The BASH computer code provides a more realistic thermal/hydraulic simulation of the reactor core and the Reactor Coolant System during the reflood phase of a LOCA, thereby allowing the increased F_Q^T limits. The NRC generically approved the Westinghouse BASH analysis methods as WCAP-10266, Revision 2. The results of this reanalysis show a decrease in the peak clad temperature, a slight increase in the maximum local metal-water reaction, and a comparable total core metal-water reaction. The increase in the maximum local metal water reaction is from 5.69% to 6.03%, which is insignificant when compared to the acceptance criteria of 17% specified by Appendix K of 10CFR46. Based on the above reasoning, CP&L has determined that, the consequences of previously evaluated accidents are not significantly increased as a result of the proposed F_Q^T increase.

   The proposed amendment to: (1) replace the existing Constant Axial Offset Control (CAOC) procedures with a combined Relaxed Axial Offset Control (RAOC)/Base Load operating strategy; (2) replace the F_{xy} Surveillance of Technical Specification 4.2.2.1 with a F_Q Surveillance; and (3) revise the f(ΔI) reset function in Technical Specification Table 2.2.1 does not increase the probability of an accident previously evaluated because they do not affect any systems or equipment which are involved in the initiation or mitigation of any previously analyzed accident. As such, these changes can not increase the probability of any accidents previously evaluated.

   CP&L has determined that the proposed amendment to: (1) replace the existing Constant Axial Offset Control (CAOC) procedures with a combined Relaxed Axial Offset Control (RAOC)/Base Load operating strategy; (2) replace the F_{xy} Surveillance of Technical

Specification 4.2.2.1 with a F_Q Surveillance; and (3) revise the f(ΔI) reset function in Technical Specification Table 2.2.1 does not increase the consequences of an accident previously evaluated. RAOC is a method of using available margin by expanding the allowable axial flux difference (AFD) band, particularly at reduced power levels. This enhances operational flexibility during routine operational maneuvers. RAOC in combination with F_Q Surveillance provides an alternate method for assuring plant operation remains below the F_Q^T limit specified in the Technical Specifications based upon a measured parameter, neutron flux. The RAOC methodology has been approved for use by the NRC in WCAP-10216-P-A, Relaxation of Constant Axial Offset Control, F_Q Surveillance Technical Specification, dated June 1983, and has been approved for use at many operating facilities including McGuire Units 1 and 2 and Catawba Units 1 and 2. Therefore, the consequences of previously evaluated accidents at SHNPP will now be comparable to that at other Commission accepted RAOC/F_Q Surveillance plants.

The impact of operating under the proposed RAOC strategy is determined by the affect the power shape envelope resulting from the newly defined AFD limits has on the consequences of the safety analyses presented in the SHNPP FSAR. For non-LOCA events, the power shapes resulting from RAOC have been evaluated with respect to the limiting power shape used in the existing analyses. It has been determined that the most limiting RAOC power shape results in a higher DNBR value than the reference power shape used in the current FSAR analyses. Therefore, the consequences of the non-LOCA events remain unchanged. In addition, power shapes which could occur at the core limits are determined using the RAOC power shape envelope and are used to define the f(ΔI) reset function (a component of the OTΔT trip function) necessary to preserve a DNBR of 1.30 and to meet fuel clad stress requirements. The more restrictive f(ΔI) reset function, reflected in the revised Technical Specification 2.2.1, preserves the DNBR and fuel clad stress limits used in the current analyses. Since the design limits for DNBR and clad stress remain the same as in the current analyses, the more restrictive Technical Specification limit placed on the f(ΔI) reset function provides assurance that the consequences presented in the SHNPP FSAR remain unchanged with the implementation of RAOC.

For the LOCA analysis, the power shape envelope defined by the new RAOC limits has been determined to be bounded by the chopped cosine shape for Large break LOCA and the top-skewed shape for the small break LOCA that form the basis for the existing analysis. Therefore, the adoption of RAOC does not change the existing LOCA analyses presented in the SHNPP FSAR and, as such, the consequences are not changed.

The proposed changes provide the flexibility to use a Base Load mode of operation. The analysis to support this mode of operation is the standard Westinghouse CAOC methodology as approved by the NRC in WCAP-8385, Topical Report - Power Distribution Control and Load Following Procedures, September 1974 and is currently in use at SHNPP. The power shapes resulting from operating within the narrow AFD bands allowed under Base Load result in a more conservative DNBR value than those allowed under RAOC and, therefore, are bounded by the discussions mentioned previously.

The proposed change replaces the existing F_{xy} Surveillance with an F_Q Surveillance. F_Q Surveillance is an alternate method to F_{xy} Surveillance that provides a more precise means of ensuring that the core F_Q remains within Technical Specification limits during routine operational maneuvers and has been approved by the NRC for use with RAOC/Base Load operation in WCAP-10216-P-A, Relaxation of Constant Axial Offset Control, F_Q Surveillance Technical Specification, dated June 1983. The change to F_Q Surveillance is only a change in the means by which measured power distributions are penalized in order to maintain actual power distributions within Technical Specification limits during operational maneuvers it does not represent a change to these limits. In addition, the existing Technical Specifications allow operation to continue with F_{xy} outside the Technical Specification limits provided an analysis of the affect on F_Q is performed. The proposed F_Q Surveillance removes this flexibility by establishing fixed limits on F_Q. Based on the above reasoning, CP&L has determined that use of F_Q Surveillance does not involve a significant increase in the consequences of previously evaluated accidents. Use of F_Q Surveillance in combination with RAOC/Base Load has been approved for use at many operating facilities including McGuire Units 1 and 2 and Catawba Units 1 and 2; therefore, the consequences of previously analyzed accidents at SHNPP will now be comparable to those at other Commission accepted F_Q Surveillance plants.

The proposed change to Technical Specification 6.9.1.6 is administrative in nature and, as such, can 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. None of the proposed changes introduce any new equipment or require any existing equipment or systems to perform a different type of function than they are currently designed to perform. In addition, F_Q Surveillance requirements in combination with RAOC/Base Load operations have been approved by the NRC for other operating units such as McGuire Units 1 and 2 and Catawba Units 1 and 2. New or different accidents were not created by the use of this methodology on those similar Westinghouse reactors.

3. The proposed amendment does not involve a significant reduction in the margin of safety. The assumptions made in the existing accident analyses for non-LOCA and small break LOCA events currently assume an F_Q^T of 2.32 or greater. Therefore, these analyses remain bounding when compared to the proposed increase in the F_Q^T limit to 2.32 and the associated change in the K(z) Local Axial Penalty Function. As such, there is no change to the margin of safety for non-LOCA and small break LOCA events. A reanalysis of the Large break LOCA event was performed by Westinghouse. This analysis was performed using the NRC approved BASH computer code. The BASH computer code provides a more realistic thermal/hydraulic simulation of the reactor core and the Reactor Coolant System during the reflood phase of a LOCA, thereby allowing the increased F_Q^T limits. The NRC generically approved the Westinghouse BASH analysis methods as WCAP-10266, Revision 2. The results of this reanalysis show a decrease in the peak clad temperature, a slight increase in the maximum local metal-water reaction, and a comparable total core metal-water reaction. The increase in the maximum local metal water reaction is from 5.69% to 6.03%, which is insignificant when compared to the acceptance criteria of 17% specified by Appendix K of 10CFR46. Based on the above reasoning, CP&L has determined that, the proposed change does not significantly decrease the margin of safety.

The proposed changes to: (1) replace the existing Constant Axial Offset Control (CAOC) procedures with a combined Relaxed Axial Offset Control (RAOC)/Base Load operating strategy; (2) replace the F_{xy} Surveillance of Technical Specification 4.2.2.1 with a F_Q Surveillance; and (3) revise the f(ΔI) reset function in Technical Specification Table 2.2.1 do not involve a significant reduction in the margin of safety.

The impact of operating under the proposed RAOC strategy is determined by the affect the power shape envelope resulting from the newly defined AFD limits has on the consequences of the safety analyses presented in the SHNPP FSAR. For non-LOCA events, the power shapes resulting from RAOC have been evaluated with respect to the limiting power shape used in the existing analyses. It has been determined that the most limiting RAOC power shape results in a higher DNBR value than the reference power shape used in the current FSAR analyses. Therefore, there is no change in the margin of safety. In addition, power shapes which could occur at the core limits are determined using the RAOC power shape envelope and are used to define the f(ΔI) reset function (a component of the OTΔT trip function) necessary to preserve a DNBR of 1.30 and to meet fuel clad stress requirements. The more restrictive f(ΔI) reset function, reflected in the revised Technical Specification 2.2.1, preserves the DNBR and fuel clad stress limits used in the current analyses. Standard Westinghouse methodology defines the f(ΔI) reset function by defining which RAOC power shapes will meet a DNBR of 1.30 and the limit on fuel clad stress. Those shapes

which would cause a violation of these limits are prevented from occurring by making the Technical Specification f(ΔI) reset function more restrictive. In this manner, the margin of safety is not reduced.

For the LOCA analysis, the power shape envelope defined by the new RAOC limits have been determined to be bounded by the chopped cosine shape for Large break LOCA and the top-skewed shape for the small break LOCA that form the basis for the existing analysis. Therefore, the adoption of RAOC does not affect the existing margin of safety for the LOCA analyses presented in the SHNPP FSAR.

The proposed changes provide the flexibility to use a Base Load mode of operation. The analysis to support this mode of operation is the standard Westinghouse CAOC methodology as approved by the NRC in WCAP-8385, Topical Report - Power Distribution Control and Load Following Procedures, September 1974 and is currently in use at SHNPP. The power shapes resulting from operating within the narrow AFD bands allowed under Base Load result in a more conservative DNBR value than those allowed under RAOC, and therefore are bounded by the discussions mentioned previously and do not decrease the margin of safety.

The proposed change replaces the existing F_{xy} surveillance with an F_Q Surveillance. F_Q Surveillance is an alternate method to F_{xy} Surveillance that provides a more precise means of ensuring that the core F_Q remains within Technical Specification limits during routine operational maneuvers and has been approved by the NRC for use with RAOC/Base Load operation in WCAP-10216-P-A, Relaxation of Constant Axial Offset Control, F_Q Surveillance Technical Specification, dated June 1983. The change to F_Q Surveillance is only a change in the means by which measured power distributions are penalized in order to maintain actual power distributions within Technical Specification limits during operational maneuvers it does not represent a change to the limits. In addition, the existing Technical Specifications allow operation to continue with F_{xy} outside the Technical Specification limits provided an analysis of the affect on F_Q is performed. The proposed F_Q Surveillance removes this flexibility by establishing fixed limits on F_Q. Based on the above reasoning, CP&L has determined that use of F_Q Surveillance does not involve a significant reduction in the margin of safety. Use of F_Q Surveillance in combination with RAOC/Base Load has been approved for use at many operating facilities including McGuire Units 1 and 2 and Catawba Units 1 and 2; therefore, the margin of safety at SHNPP will now be comparable to that of at other Commission accepted F_Q Surveillance plants.

The proposed change to Technical Specification 6.9.1.6 is administrative in nature and, as such, can not involve a significant reduction in the margin of safety.

ENCLOSURE 4

SHEARON HARRIS NUCLEAR POWER PLANT
NRC DOCKET NO. 50-400
OPERATING LICENSE NPF-63
REQUEST FOR LICENSE AMENDMENT

10CFR50.92 EVALUATION
INCREASED F-DELTA-H MULTIPLIER

The Commission has provided standards in 10CFR50.92(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 consideration. The bases for this determination are as follows:

Proposed Change

SHNPP Cycle 2 is a transition cycle from a high leakage initial core loading designed to support load follow operation to a low leakage reload fuel cycle designed to support a base load plant. The benefits CP&L expects from this planned fuel cycle strategy are reduced vessel fluence, increased capacity factor, greater ease and simplicity of operation and reduced fuel cycle cost. The proposed amendment is one of a series of Technical Specification changes required to support this transition.

The proposed amendment revises the equation used to determine F-Delta-H, the Nuclear Enthalpy Rise Hot Channel Factor, presented in Technical Specification 3.2.3.b. The existing 0.2 multiplier is being increased to 0.3. This multiplier acts to increase the allowable F-Delta-H at reduced power levels, thereby increasing the flexibility in reload core design. In addition, the core limit curves presented in Technical Specification Figure 2.1-1 have been revised. These curves, which are based on F-Delta-H, show the loci of points of thermal power, Reactor Coolant System pressure and average temperature for which the minimum DNBR is no less than 1.30.

Basis

The 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. The proposed amendment revises the equation used to determine F-Delta-H, the Nuclear Enthalpy Rise Hot Channel Factor, presented in Technical Specification 3.2.3.b. The existing 0.2 multiplier is being increased to 0.3. This multiplier acts to increase the allowable F-Delta-H at reduced power levels. In addition, the core limit curves presented in Technical Specification Figure 2.1-1 have been revised. The proposed amendment does not affect any systems or equipment which are involved in the initiation or mitigation of any previously analyzed accident and, as such, can not increase the probability of any accident previously evaluated.

   Since the increase in the F-Delta-H multiplier only allows a higher Nuclear Enthalpy Rise Hot Channel Factor at power levels below 100%, the majority of safety analyses (those initiated from full power) are not impacted. Non-LOCA transients initiated from reduced power which directly model F-Delta-H are affected by the changes. Indirectly, any events which rely on the OTΔT/OPΔT setpoints for protection may be impacted by the increase in the F-Delta-H multiplier. Since a power dependent value of F-Delta-H is assumed in the generation of the core limits, the increase in F-Delta-H at reduced power will result in a change to the core limits below 100% power. The existing OTΔT/OPΔT setpoints were compared to the revised core limits which include the F-Delta-H multiplier increase. It was determined that the existing setpoints continue to protect the limits shown in Technical Specification Figure 2.1-1, and thus events which rely on the OTΔT/OPΔT setpoints for protection remain within their acceptance criteria presented in Chapter 15 of the SHNPP FSAR. The only SHNPP FSAR Chapter 15 event initiated from part power is startup of an inactive loop. An evaluation has shown that the current limit specified in FSAR Section 15.4.4 for the minimum DNBR (greater than 1.30) is met for this event with the revised F-Delta-H multiplier. In addition, operation with an inoperable loop is not permitted by the SHNPP Technical Specifications.

   Based on the above reasoning, the consequences of previously evaluated accidents are not increased.

2. The proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated. As stated in Item 1, the proposed amendment does not introduce any new equipment or require any existing equipment or systems to perform a different type of function than they are currently designed to perform. The change merely establishes revised F-Delta-H limits at reduced power levels. Therefore, the proposed change can not create the possibility of a new or different kind of accident from any accident previously evaluated. In addition, similar changes to the F-Delta-H multiplier have been granted for

McGuire Units 1 and 2 and Catawba Units 1 and 2. No new or different accidents from those analyzed for SHNPP are addressed for these plants.

3. The proposed amendment does not involve a significant reduction in the margin of safety. The proposed amendment revises the equation used to determine F-Delta-H, the Nuclear Enthalpy Rise Hot Channel Factor, presented in Technical Specification 3.2.3.b. The existing 0.2 multiplier is being increased to 0.3. This multiplier acts to increase the allowable F-Delta-H at reduced power levels. In addition, the core limit curves presented in Technical Specification Figure 2.1-1 have been revised to reflect the increase in allowed peaking for power levels less than 100%. Since a power dependent value of F-Delta-H is assumed in the generation of the core limits, the increased allowable peaking for power levels less than 100% tends to reduce the margin between the OTΔT trip setpoints and the curves representing the loci of 1.30 DNBR points. Since the increase in the F-Delta-H multiplier only allows a higher peaking at power levels below 100%, the majority of safety analyses (those initiated from full power) are not impacted. The only SHNPP FSAR Chapter 15 event initiated from part power is startup of an inactive loop. An evaluation has shown that the current limit for the minimum DNBR (greater than 1.30) is met for this event with the revised F-Delta-H multiplier. In addition, operation with an inoperable loop is not permitted by the SHNPP Technical Specifications. Based on this reasoning, the Company has determined that the proposed change does not involve a significant reduction in the margin of safety.

ENCLOSURE 5

SHEARON HARRIS NUCLEAR POWER PLANT-
NRC DOCKET NO. 50-400
OPERATING LICENSE NPF-63
REQUEST FOR LICENSE AMENDMENT

10CFR50.92 EVALUATION
MISCELLANEOUS TECHNICAL SPECIFICATION CHANGES

The Commission has provided standards in 10CFR50.92(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 consideration. The bases for this determination are as follows:

Proposed Change

The proposed amendment revises: (1) the Technical Specification Table 4.3-1 Surveillance Requirements for the Excore Power Range Monitors; and (2) the description of Fuel Assemblies located in Technical Specification 5.3.1. Currently, Technical Specification Table 4.3-1 requires that a single-point comparison of INCORE/EXCORE Axial Flux Difference (AFD) be performed monthly and an INCORE/EXCORE calibration be performed quarterly. The proposed change to Table 4.3-1 revises these surveillances to once per 31 Effective Full Power Days (EFPD) and once per 92 EFPD respectively.

The proposed change to the fuel assembly description of Technical Specification 5.3.1 allows for repair of fuel assemblies by substitution of filler rods or vacancies for damaged fuel rods.

Basis

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

1. Revising the surveillance frequencies associated with calibration of the excore detectors from a strictly calendar basis to an Effective Full Power Days basis does not affect any systems or

equipment which are involved in the initiation or mitigation of any previously analyzed accident. The change to the surveillance interval does not alter the channels ability to perform their necessary functions. The instruments response changes as a function of core exposure and is not dependent on the number of calendar days between surveillance. The existing Technical Specification allows for plant operation at 100% power for 30 calendar days, therefore, the excore detector is currently allowed to operate for up to 30 EFPD without recalibration. Since instrument response is a function of core exposure, revising the Technical Specification surveillance interval from 30 calendar days to 30 EFPD does not represent a relaxation of current Technical Specification requirements. Therefore, the proposed revision to the Technical Specification Table 4.3-1 surveillance frequencies does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed change to the fuel assembly description in Technical Specification 5.3.1 does not affect any systems or equipment involved in the initiation or mitigation of any previously analyzed accident. The change merely allows replacement of damaged fuel rods with filler rods or vacancies provided a cycle specific evaluation is performed to justify the modification. Therefore, the proposed revision to Technical Specification 5.3.1 does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. The proposed changes to Technical Specification Table 4.3-1 and Technical Specification 5.3.1 do not require the use of a new or different system than currently exists, nor do they require existing systems to perform functions for which they were not intended. Therefore, the proposed amendment 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. The change to the surveillance intervals associated with the calibration of the excore power range channels specified in Technical Specification Table 4.3-1 does not adversely affect their operability. The instruments response changes as a function of core exposure and is not dependent on the number of calendar days between surveillance. The existing Technical Specification allows for plant operation at 100% power for 30 calendar days, therefore, the excore detector is currently allowed to operate for up to 30 EFPD without recalibration. Since instrument response is a function of core exposure, revising the Technical Specification surveillance interval from 30 calendar days to 30 EFPD does not represent a relaxation of current

Technical Specification requirements. Therefore, this change does not result in a significant reduction in the margin of safety.

The proposed change to Technical Specification 5.3.1 allows substitution of filler rods or vacancies for damaged fuel rods provided a cycle specific evaluation is performed to justify the modification. This evaluation will take into account the actual configuration of the reconstituted assemblies. Therefore, the proposed revision to Technical Specification 5.3.1 does not involve a significant reduction in the margin of safety.

ENCLOSURE 6

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10CFR50.92 EVALUATION
BORON DILUTION/SLIDING SHUTDOWN MARGIN

The Commission has provided standards in 10CFR50.92(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 consideration. The bases for this determination are as follows:

Proposed Change

SHNPP Cycle 2 is a transition cycle from a high leakage initial core loading designed to support load follow operation to a low leakage reload fuel cycle designed to support a base load plant. The benefits CP&L expects from this planned fuel cycle strategy are reduced vessel fluence, increased capacity factor, greater ease and simplicity of operation and reduced fuel cycle cost. In order to realize these benefits, the Cycle 2 design requires an increased amount of boron at beginning-of-cycle to provide adequate negative reactivity. The proposed amendment is designed to minimize the impact of the higher beginning-of-cycle boron concentration on the required shutdown margin resulting from Inadvertent Boron Dilution event requirements.

The proposed amendment modifies the shutdown margin requirements of Technical Specification Section 3/4.1.1. The current Technical Specifications require a fixed value for shutdown margin for a given mode of operation. The proposed amendment maintains the current fixed shutdown margin requirement for Modes 1, 2, and 6 while implementing a variable shutdown margin requirement as a function of RCS boron concentration for Modes 3, 4, and 5. Due to the higher shutdown margin required at the beginning of SHNPP Cycle 2 for Mode 5, the minimum fluid volume requirements for the boric acid tank and the refueling water storage tank specified in Technical Specifications 3.1.2.5 and 3.1.2.6 have been increased to provide sufficient inventory to go from Mode 1 to Mode 5. The addition of a new figure in the Technical Specifications necessitates administrative changes affecting the designation of the Rod

Group Insertion Limits Versus Thermal Power figure and associated references, the details of which are discussed in the "D-Bank Reconfiguration - Control Rod Insertion Limits" Technical Specification change.

Basis

The 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. The revision to the shutdown margin requirements established in Technical Specifications 3.1.1.1 and 3.1.1.2 does not increase the probability of an accident previously evaluated because it does not affect any systems or equipment involved in the initiation or mitigation of any previously analyzed accident. The proposed changes to Technical Specification 3.1.1.1 are administrative in nature. Reference to Modes 3 and 4 is deleted from Technical Specification 3.1.1.1 and included in the revised Technical Specification 3.1.1.2. The licensing basis for SHNPP establishes 15 minutes as an acceptable operator action time limit for termination of an Inadvertent Boron Dilution (IBD) event. For Mode 3, an operator action time of 15 minutes to terminate the IBD event has been preserved by the proposed amendment. Also, appropriate margins for uncertainties and malfunctions, such as a stuck rod, are maintained. The IBD event for Mode 4, though not currently analyzed in the SHNPP FSAR, has been analyzed for Cycle 2 to ensure that the same criteria applicable to Mode 3 are met. This represents an added conservatism since an IBD event is not currently analyzed in the SHNPP FSAR. The revised Technical Specification 3.1.1.2 for Mode 5 increases the required shutdown margin at high boron concentrations and reduces the required shutdown margin at low boron concentrations. The only SHNPP FSAR Chapter 15 event affected by the proposed reduction in shutdown margin in Mode 5 is IBD. The Mode 5 IBD event has been reanalyzed and it was determined that the proposed sliding shutdown margin coupled with the a lower High Flux at Shutdown Alarm (HFSA) setpoint maintains at least 15 minutes from alarm indication to loss of shutdown margin and assures that appropriate margins for uncertainties and malfunctions such as a stuck rod are maintained. Therefore, the consequences of the IBD event are not increased.

   The increased minimum fluid volume requirements for the boric acid tank and the refueling water storage tank specified in Technical Specifications 3.1.2.5 and 3.1.2.6 do not alter the method in which any safety related system performs its intended function. Therefore, the revision to Specifications 3.1.2.5 and 3.1.2.6 does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. The proposed amendment does not require the use of a new or different system than currently exists, nor does it require existing systems to perform functions which they were not intended to perform. Therefore, the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated. In addition, similar changes to the incorporate a variable shutdown margin have been granted for V. C. Summer, Vogtle, and South Texas Project. No new or different accidents from those analyzed for SHNPP are addressed for these plants.

3. The proposed amendment does not involve a significant reduction in the margin of safety. The proposed changes to Technical Specification 3.1.1.1 are administrative in nature. Reference to Modes 3 and 4 is deleted from Technical Specification 3.1.1.1 and included in the revised Technical Specification 3.1.1.2. The licensing basis for SHNPP establishes 15 minutes as an acceptable operator action time limit for termination of an Inadvertent Boron Dilution (IBD) event. For Mode 3, an operator action time of 15 minutes to terminate the IBD event has been preserved by the proposed amendment. Also, appropriate margins for uncertainties and malfunctions, such as a stuck rod, are maintained. The IBD event for Mode 4, though not currently analyzed in the SHNPP FSAR, has been analyzed for Cycle 2 to ensure that the same criteria applicable to Mode 3 are met. This represents an added conservatism since an IBD event is not currently analyzed in the SHNPP FSAR. The revised Technical Specification 3.1.1.2 for Mode 5 increases the required shutdown margin at high boron concentrations and reduces the required shutdown margin at low boron concentrations. The only SHNPP FSAR Chapter 15 event affected by the proposed reduction in shutdown margin in Mode 5 is IBD. The Mode 5 IBD event has been reviewed to ensure that during normal operation including anticipated operational occurrences specified fuel design limits are not exceeded. The proposed sliding shutdown margin coupled with a lower HFSA setpoint maintains at least 15 minutes from alarm indication to loss of shutdown margin and assures that appropriate margins for uncertainties and malfunctions such as a stuck rod are maintained. Therefore, the revision to the shutdown margin requirements established in Technical Specifications 3.1.1.1 and 3.1.1.2 does not involve a significant reduction in the margin of safety.

The increased minimum fluid volume requirements for the boric acid tank and the refueling water storage tank specified in Technical Specifications 3.1.2.5 and 3.1.2.6 do not alter the method in which any safety related system performs its intended function. The minimum borated water volumes were increased so that sufficient inventory is available to provide the required shutdown margin. Therefore, the revision to Specifications 3.1.2.5 and 3.1.2.6 does not involve a reduction in the margin of safety.