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SUBJECT: Application for amend to license NPF-63, increasing AOT for refueling water storage tank to twelve hs while performing TS surveillance 4.4.6.2.2..

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Carolina Power & Light Company
PO Box 165
New Hill NC 27562

William R. Robinson
Vice President
Harris Nuclear Plant
SERIAL: HNP-97-059
10 CFR 50.90

MAR 14 1997

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
REQUEST FOR LICENSE AMENDMENT
REFUELING WATER STORAGE TANK

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 to Technical Specification (TS) 3/4.5.4, "Refueling Water Storage Tank," and its associated Bases, increases the allowed outage time for the Refueling Water Storage Tank (RWST) to twelve hours while performing TS surveillance 4.4.6.2.2.

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 the Company'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 needs to be prepared in connection with the issuance of the amendment.

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 prior to April 30, 1997 to support

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surveillance testing required prior to restart from the upcoming refueling outage.

Please refer any questions regarding this submittal to Ms. D. B. Alexander at (919) 362-3190.

Sincerely,



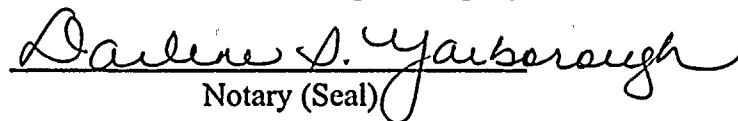
W. R. Robinson

JHE/jhe

Enclosures:

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

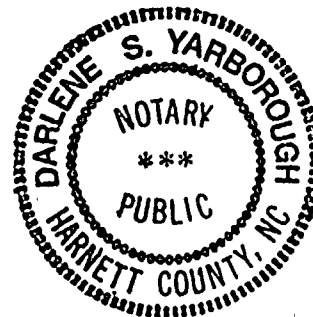
W. R. Robinson, having been first duly sworn, did depose and say that the information contained herein is true and correct to the best of his information, knowledge and belief; and the sources of his information are employees, contractors, and agents of Carolina Power & Light Company.



Notary (Seal)

My commission expires: 1-6-2000

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





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Nuclear Records
Harris Licensing File
File: H-X-0511

ENCLOSURE 1

SHEARON HARRIS NUCLEAR POWER PLANT
NRC DOCKET NO. 50-400/LICENSE NO. NPF-63
REQUEST FOR LICENSE AMENDMENT
REFUELING WATER STORAGE TANK

BASIS FOR CHANGE REQUEST

Background

Technical Specification surveillance 4.4.6.2.2 requires that reactor coolant system pressure isolation valves be demonstrated operable by verifying leakage to be within specified limits. This surveillance is performed prior to entry into Mode 2, each refueling outage, whenever flow is established through the pressure isolation valves, or whenever the plant has been in cold shutdown for greater than 72 hours. This surveillance is accomplished by operations surveillance test OST-1506, "Reactor Coolant System Isolation Valve Leak Test - 18 Month Interval- Mode 3."

As described in the Technical Specification Bases, the operability of the Refueling Water Storage Tank (RWST) ensures that a sufficient supply of borated water is available for injection into the core by the emergency core cooling system. This borated water is used as cooling water for the core in the event of a LOCA and provides negative reactivity to counteract any positive increase in reactivity caused by reactor coolant system (RCS) cooldown. The limits on RWST minimum volume and boron concentration assure that: (1) sufficient water is available within containment to permit recirculation cooling flow to the core, and (2) the reactor will remain subcritical in the cold condition following mixing of the RWST and the RCS water volumes with all shutdown and control rods inserted except for the most reactive control assembly. These limits are consistent with the assumptions of the LOCA and steam line break analyses.

LER 96-013 identified conditions outside the plant design basis where non-safety, non-seismic systems have been aligned to safety related systems when the safety systems were required to be operable. One identified alignment was the connection of the hydrotest pump to the RWST to perform OST-1506. This test is conducted to satisfy Technical Specification surveillance requirement 4.4.6.2.2. If a seismic event occurred during OST-1506, the non-seismic portions of the hydrotest pump could fail and potentially drain the RWST below the minimum analyzed volume assumed in the safety analysis. The need to credit manual actions to complete this evolution was identified as a potential unreviewed safety question during a Plant Nuclear Safety Committee (PNSC) meeting on February 26, 1997. This issue was discussed with the NRC staff during a conference call on March 4, 1997. This proposed license amendment will allow completion of surveillance test OST-1506 with a dedicated attendant stationed at the hydrotest pump suction valve. While performing OST-1506, the RWST is declared inoperable when the normally locked closed seismic boundary isolation valve 1CT-22 is opened. This license amendment request provides the basis to credit manual actions to ensure that the RWST will



remain capable of performing its safety function during this surveillance test.

Proposed Change

The proposed amendment to Technical Specification (TS) 3/4.5.4, "Refueling Water Storage Tank," and its associated Bases, increases the allowed outage time for the Refueling Water Storage Tank (RWST) to twelve hours while performing TS surveillance 4.4.6.2.2 with a dedicated attendant stationed at valve 1CT-22.

Basis

The non-safety, non-seismic hydrotest pump is normally separated from the RWST by a safety-related, locked closed manual boundary isolation valve (1CT-22). However, performance of Technical Specification required surveillance test OST-1506 requires the short term use of the hydrotest pump during plant operating modes. Specifically, this hydrotest pump provides a high pressure source for leak testing the RCS pressure isolation valves in Mode 3. The test is performed prior to entry into Mode 2, each refueling outage, whenever flow is established through the pressure isolation valves, or whenever the plant has been in cold shutdown for greater than 72 hours. Normally, the test is completed in less than 8 hours. Due to the piping configuration, a break in the non-seismic portion of the piping during these planned evolutions could result in draining the RWST below the minimum analyzed volume. Therefore, to mitigate the consequences of a failure in the non-seismic piping, manual actions will be needed to isolate the break flow, (i.e., close valve 1CT-22), prior to reducing the water volume in the RWST below the minimum analyzed volume.

This request demonstrates that manual actions to mitigate the postulated pipe failure in the non-seismic crosstie to the RWST can be credited. The acceptability of the proposed manual actions is based on (1) the available margin in the RWST volume to give the valve attendant adequate response time to close the valve, and (2) the reliability of the valve as demonstrated by operating experience, valve design, and proposed valve stroke testing. In addition, accessibility and other design considerations have also been evaluated.

Available Response Time Determination:

The response time available to the valve attendant to perform the mitigating action can be determined by the break flow rate and the volume margin available in the RWST. A worst case break flow rate was estimated by assuming a break immediately downstream of the boundary valve outlet. Neglecting line losses, the maximum break flow is conservatively calculated to be 240 gpm.

A tank level injection margin of approximately 2.1 feet (or 24,885 gallons) is available in the RWST. This margin is the difference between the analyzed volume required for injection and the low level alarm setpoint. Assuming that manual actions will be initiated upon the receipt of the low level alarm, at least 103 minutes ($24,885 \text{ gal.} \div 240 \text{ gpm}$) is available for the valve



attendant to execute the manual action. Based on guidance from industry standard, ANSI/ANS 58.8, "Time Response Design Criteria for Nuclear Safety Related Operator Actions," a conservative response time for the manual actions of thirty minutes can be assumed. The following discussion will demonstrate the capability of the valve attendant to execute the action within this response time while also considering any adverse effects of the seismic event.

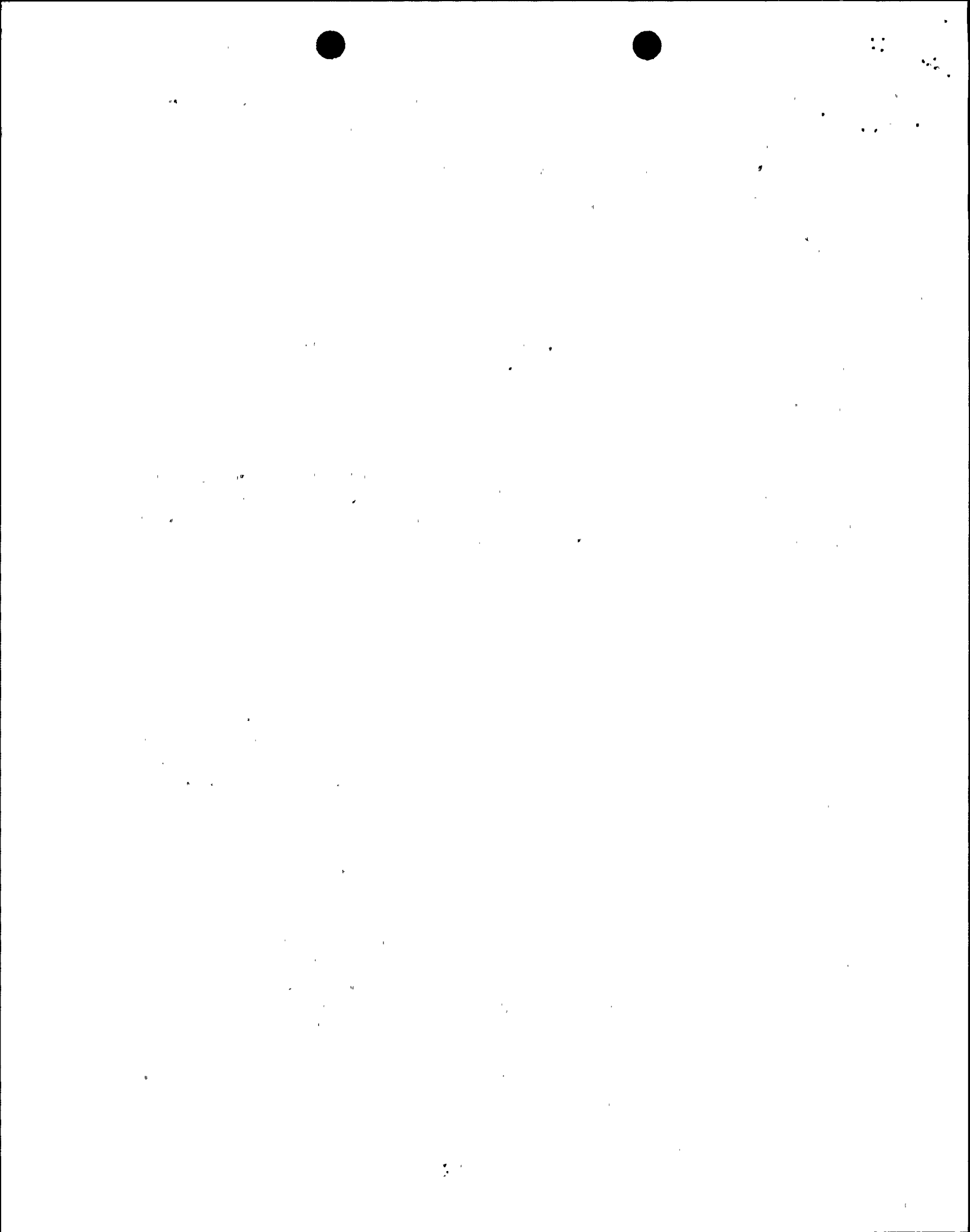
It is evident that a postulated seismic event would pose additional challenges to the valve attendant by diverting attention away from closing 1CT-22 and limiting access to the valve. In order to ensure that the manual action would be executed in a timely manner, procedural controls will be in place which will assign a dedicated attendant for the specific purpose of closing this valve. The dedicated attendant will be stationed at the valve and will be in communication with the Control Room. The term "at the valve" is defined as located within the RWST compartment. The RWST compartment has an interior dimension of approximately 58 feet by 51 feet. The RWST has an outside diameter of 45 feet and is located in this tank compartment. The Control Room operator will be monitoring level in the RWST and will notify the dedicated attendant to immediately close the valve when the RWST low level alarm is received. Since the valve attendant will be stationed at the valve, accessibility limitations are not a concern. Closing of the valve by the dedicated attendant does not require any special preparations. In addition, the dedicated attendant will be equipped with a flashlight in case of failure of local area lighting. Required manual actions will be reviewed with personnel involved in the testing during the Control Room prejob briefing prior to the performance of OST-1506.

Valve Reliability:

Valve 1CT-22 is a safety related, manual, 2-inch, 1500 lb, stainless steel globe valve in a very low temperature and pressure service. It is located approximately 3.5 feet above the floor elevation which permits firm footing for the valve attendant while turning the handwheel. Based on operating experience with this type of valve, it is very reliable and is not expected to fail. Also, it is designed to withstand the effects of a seismic event and remain functional. In addition, valve 1CT-22 will be stroke tested as part of OST-1506 to verify that the valve will close when required. Based on operating experience, valve design, and stroke testing, it is unlikely that valve 1CT-22 would be unable to be closed by the valve attendant.

Accessibility Concerns:

Adverse conditions which could hinder the valve attendant from closing the valve (1CT-22) following the assumed seismic event were evaluated. One concern identified was the potential for flooding inside the RWST compartment where the valve is located. Due to the limited free space inside the tank compartment, a postulated break in non-safety piping located in the area could potentially flood the compartment and submerge the valve. Four non-safety piping lines located in the tank compartment were evaluated to verify that potential flooding in the vicinity of valve 1CT-22 would not prevent the valve attendant from closing the valve.



The largest non-safety line in the area is a 6-inch recirculation line to RWST from the Containment Spray pumps (approximately 1800 gpm flow). To prevent this line from causing a potential flooding concern, operating procedures will be revised to include administrative controls to prohibit the use of the containment spray pump recirculation line during performance of this surveillance test OST-1506.

For flooding in the compartment during the performance of this surveillance testing, the most limiting non-safety line is the 4-inch demineralized water supply line to the RWST. The potential break flow from this line was conservatively estimated as the rated capacity of the demineralized water supply pump of 300 gpm. Based on this flow rate during the thirty minute time period assumed for manual actions, the potential flooding water level was calculated as 1.2 feet. Since valve 1CT-22 is located approximately 3.5 feet above the floor elevation, failure of this line will not pose a significant accessibility concern.

The remaining two non-safety lines in the area evaluated for flooding are associated with the hydrotest pump used during the performance of surveillance test OST-1506. These lines are the 2-inch suction line for the hydrotest pump in which valve 1CT-22 is located and the 2-inch hydrotest pump return line to the RWST. The 2-inch non-safety hydrotest pump suction line is seismically supported within the tank compartment up to the floor penetration and as such is not assumed to failed within the compartment during the postulated seismic event. For the 2-inch hydrotest pump return line to the RWST, the break flow was conservatively estimated as the rated capacity of the hydrotest pump of 24.5 gpm. Flooding from this line would be bounded by the postulated failure of the demineralized water supply line and does not pose a significant accessibility concern.

One additional accessibility concern was evaluated involving the potential rupture of an auxiliary steam line located just outside the tank compartment. The auxiliary steam line is routed along the top of the compartment wall. Failure of this steam line could prevent valve attendant access to the ladder leading into the compartment. To eliminate this concern, the dedicated attendant assigned to close valve 1CT-22 will be located within the tank compartment during the performance of OST-1506.

Potential radiological dose to the dedicated attendant was also evaluated. The normal general area dose rates in the RWST compartment area are less than 1 mrem/hr due to activity within the RWST. The dose rate at contact with piping at the valve location is normally less than 20 mrem/hr. Therefore, the dose to the dedicated attendant assigned to close valve 1CT-22 will not exceed 5 rem whole body, or its equivalent to any part of the body, for the duration of postulated seismic event.

Additional Design Impacts:

An additional design criteria consideration associated with the failure of the non-seismic portion of hydrotest pump piping is the potential for flooding in the Reactor Auxiliary Building (RAB). The failure of the hydrotest pump suction line would result in break flow of approximately 240

gpm into the RAB but is bounded by currently assumed flooding from other line breaks in the area.

Conclusions

Based on the use of a dedicated attendant to close valve 1CT-22, the lack of significant accessibility concerns, and the reliability of the valve to function, it is concluded that 30 minutes is ample time for a valve attendant to manually close valve 1CT-22. Since the RWST volume margin provides up to 103 minutes to respond to the pipe failure, it is reasonable to assume that manual actions to isolate the postulated pipe failure can be taken before the RWST level decreases below the minimum analyzed volume assumed in the safety analysis. In addition, the probability of a seismic event occurring during this short-term, infrequent evolution with 1CT-22 open is extremely low. Alternatives to this TS change include: (1) analyzing and upgrading the existing non-seismic piping associated with the hydrotest pump to meet seismic qualification requirements, (2) designing and installing a new borated water supply source for the hydrotest pump, or (3) designing and relocating the hydrotest pump suction piping connection above the minimum analyzed water level for the RWST. Based upon the analysis presented in this license amendment request justifying the use of manual actions to ensure that the RWST will remain capable of performing its safety function, these alternatives are not justified based on their marginal safety benefit.

ENCLOSURE 2

SHEARON HARRIS NUCLEAR POWER PLANT
NRC DOCKET NO. 50-400/LICENSE NO. NPF-63
REQUEST FOR LICENSE AMENDMENT
REFUELING WATER STORAGE TANK

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

The proposed amendment to Technical Specification (TS) 3/4.5.4, "Refueling Water Storage Tank," and its associated Bases, increases the allowed outage time for the Refueling Water Storage Tank (RWST) to twelve hours while performing TS surveillance 4.4.6.2.2 with a dedicated attendant stationed at valve 1CT-22.

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.

The non-safety, non-seismic hydrotest pump is normally maintained separated from the RWST by a safety-related, locked closed manual operated boundary isolation valve (1CT-22). However, performance of Technical Specification required surveillance test OST-1506, "Reactor Coolant System Isolation Valve Leak Test - 18 Month Interval- Mode 3," requires the short term use of the hydrotest pump during plant operating modes. Specifically, this hydrotest pump provides a high pressure source for leak testing the RCS pressure isolation valves in Mode 3. The test is performed prior to entry into Mode 2, each refueling outage, whenever flow is established through the pressure isolation valves,

or whenever the plant has been in cold shutdown for greater than 72 hours. Normally, the test is completed in less than 8 hours. Due to the piping configuration, a break in the non-seismic portion of the piping during these planned evolutions could result in draining the RWST below the minimum analyzed volume. Therefore to mitigate the consequences of a failure in the non-seismic piping, manual actions will be needed to isolate the break flow, (i.e., close valve 1CT-22), prior to reducing the water volume in the RWST below the minimum analyzed volume.

Based on the use of a dedicated attendant to close valve 1CT-22, the lack of significant accessibility concerns, and the reliability of the valve to function, it can be concluded that 30 minutes is ample time for a valve attendant stationed at the valve to execute the manual action. Since the RWST volume margin provides up to 103 minutes to respond to the pipe failure, it is reasonable to assume that manual actions to isolate the postulated pipe failure can be taken before the RWST level decreases below the minimum analyzed volume assumed in the safety analysis.

Therefore, there would be no 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.

Based on the use of a dedicated attendant to close valve 1CT-22, the lack of significant accessibility concerns, and the reliability of the valve to function, it can be concluded that 30 minutes is ample time for a valve attendant stationed at the valve to execute the manual action. Since the RWST volume margin provides up to 103 minutes to respond to the pipe failure, it is reasonable to assume that manual actions to isolate the postulated pipe failure can be taken before the RWST level decreases below the minimum analyzed volume assumed in the safety analysis. As a result, the capability of the RWST to perform its safety function is not impacted.

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.

As described in the Technical Specification Bases, the operability of the RWST ensures that a sufficient supply of borated water is available for injection into the core by the emergency core cooling system. This borated water is used as cooling water for the core in the event of a LOCA and provides negative reactivity to counteract any positive increase in reactivity caused by reactor coolant system (RCS) cooldown. The limits on RWST minimum volume and boron concentration assure that: (1) sufficient water is available within containment to permit recirculation cooling flow to the core, and (2) the reactor will remain subcritical in the cold condition following mixing of the RWST and

the RCS water volumes with all shutdown and control rods inserted except for the most reactive control assembly. These limits are consistent with the assumptions of the LOCA and steam line break analyses.

Based on the use of a dedicated attendant to close valve 1CT-22, the lack of significant accessibility concerns, and the reliability of the valve to function, it can be concluded that 30 minutes is ample time for a valve attendant stationed at the valve to execute the manual action. Since the RWST volume margin provides up to 103 minutes to respond to the pipe failure, it is reasonable to assume that manual actions to isolate the postulated pipe failure can be taken before the RWST level decreases below the minimum analyzed volume assumed in the safety analysis. As a result, the capability of the RWST to perform its safety function is not impacted.

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

ENCLOSURE 3

SHEARON HARRIS NUCLEAR POWER PLANT
NRC DOCKET NO. 50-400/LICENSE NO. NPF-63
REQUEST FOR LICENSE AMENDMENT
REFUELING WATER STORAGE TANK

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

The proposed amendment to Technical Specification (TS) 3/4.5.4, "Refueling Water Storage Tank," and its associated Bases, increases the allowed outage time for the Refueling Water Storage Tank (RWST) to twelve hours while performing TS surveillance 4.4.6.2.2 with a dedicated attendant stationed at valve 1CT-22.

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 significant increase in the amounts of any effluents that may be released offsite.

The proposed change does not introduce any new equipment or require existing systems to perform a different function than they are currently designed to perform. The change does not introduce any new effluents or increase the quantities of existing effluents. As such, the change cannot 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 does involve a change to surveillance test OST-1506, "Reactor Coolant System Isolation Valve Leak Test - 18 Month Interval- Mode 3." This change requires that a dedicated attendant be stationed at valve 1CT-22 during performance of the surveillance test. Valve 1CT-22 is located in RWST compartment. The normal general area dose rates in the RWST compartment area are less than 1 mrem/hr due to activity within the RWST. The dose rate at contact with piping at the valve location is normally less than 20 mrem/hr. This surveillance test is performed prior to entry into Mode 2, each refueling outage, whenever flow is established through the pressure isolation valves, or whenever the plant has been in cold shutdown for greater than 72 hours. Normally, the test is completed in less than 8 hours. As a result, this change will result in a small increase in the individual and cumulative occupational radiation exposure; however, this increase is not significant.

Therefore, the amendment does not result in a significant increase in either individual or cumulative occupational radiation exposure.

ENCLOSURE 4
SHEARON HARRIS NUCLEAR POWER PLANT
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PAGE CHANGE INSTRUCTIONS

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