

CATEGORY 1

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 ROBINSON, W.R. Carolina Power & Light Co.
 RECIP.NAME RECIPIENT AFFILIATION
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SUBJECT: Application for amend to license NPF-63, deleting TS SR 4.9.12.d.4 which requires verifying that filter cooling bypass valve for FHB EES is locked in balanced position at least once per 18 months.

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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-98-036
10CFR50.90

MAR 12 1998

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
TECHNICAL SPECIFICATIONS 3/4.9.12

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 TS 3/4.9.12, "Fuel Handling Building Emergency Exhaust System". Specifically, Harris Nuclear Plant (HNP) proposes to delete Surveillance Requirement 4.9.12.d.4 which requires verifying that the filter cooling bypass valve for the Fuel Handling Building Emergency Exhaust System is locked in the balanced position at least once per 18 months.

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 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.

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. J. H. Eads at (919) 362-2646.

Sincerely,

W. R. Robinson

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Enclosures:

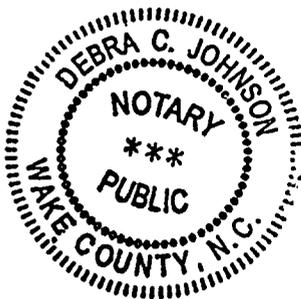
1. Basis for Change Request
2. 10 CFR 50.92 Evaluation
3. Environmental Considerations
4. Page Change Instructions
5. Technical Specification Pages

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.

Debra C. Johnson

Notary (Seal)

My commission expires: June 29, 1999



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



bcc: Ms. D. B. Alexander
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SHEARON HARRIS NUCLEAR POWER PLANT
NRC DOCKET NO. 50-400/LICENSE NO. NPF-63
REQUEST FOR LICENSE AMENDMENT
TECHNICAL SPECIFICATION TS 3/4.9.12

BASIS FOR CHANGE REQUEST

Background

The Harris Nuclear Plant (HNP) Fuel Handling Building Emergency Exhaust System (FHBEES) contains two units (E-12 and E-13) which consist of a fan, charcoal adsorber beds and HEPA filters. To prevent degradation of the charcoal bed removal efficiency, the units contain heaters to control the humidity of the air passing through the charcoal. To prevent potential auto-ignition of the charcoal in the idle unit due to heat from the decay of radionuclides captured by the charcoal, the system was originally designed to provide cooling flow (approximately 5% of total flow) through interconnecting ductwork for the idle unit. This interconnecting ductwork contains a filter cooling bypass valve (3FV-B5) which was originally designed to be locked in the throttled position. NRC Regulatory Guide 1.52 and the HNP Final Safety Analysis Report (FSAR) Section 6.5.1 both indicate that the cooling flow should pass from the discharge of the idle unit to the suction of the on-line unit. Any releases would thus be filtered through a charcoal filter with the appropriate design efficiency.

As discussed in Licensee Event Report (LER) 97-021, Revision 1, HNP identified a design deficiency in the Fuel Handling Building Emergency Exhaust System (FHBEES), wherein the cooling flow on the HNP FHBEES units passes from the discharge of the idle unit to the discharge of the on-line unit. Since the heaters that control relative humidity do not run when the unit is not placed in service, the humidity in the idle unit is not controlled. Therefore, the efficiency of the charcoal filter in the idle unit could potentially be degraded. Air flowing through this idle unit could be filtered at an efficiency lower than the value assumed in the HNP FSAR Chapter 15 fuel handling accident analysis (i.e. 95%). This could have resulted in higher calculated off-site doses for a fuel handling accident than that assumed in the FSAR analysis.

The minimum design requirements for these components are specified in HNP FSAR section 6.5.1.1, which indicated the system would be designed and sized in accordance with Regulatory Guide (Reg. Guide) 1.52, Revision 2 with the exceptions listed in FSAR Table 6.5.1-2. Section C.3.k of Reg. Guide 1.52 provides guidance for a low-flow air bleed system. Specifically, Section C.3.k states that: "The design of the adsorber section should consider possible iodine desorption and adsorbent auto-ignition that may result from radioactivity-induced heat in the adsorbent and concomitant temperature rise. Acceptable designs include a low-flow air bleed system, cooling coils, water spray for the adsorber section, or other cooling mechanisms. Any cooling mechanism should satisfy the single-failure criterion. A low-flow air bleed system should satisfy the single-failure criterion for providing low-humidity (less than 70% relative humidity) cooling air flow." The current design for FHBEES is such that a low flow bleed system is provided. However, as previously discussed, the heaters contained within the idle emergency exhaust units do not remain energized after the fan is secured and bleed flow is initiated. Therefore, the presence of bleed flow does not necessarily guarantee the $\leq 70\%$ relative humidity cooling air required by Reg. Guide 1.52, Section C.3.k.

The FHBEES is designed to withstand a safe shutdown earthquake (SSE) without a loss of function. The system is also designed such that any single active failure of the system will not impair the ability of the system to comply with its design basis (per HNP FSAR 6.5.1.1). The system is

designed to remove 95% of all elemental and organic iodine when the filtered air is controlled to $\leq 70\%$ relative humidity (per ANSI N510-1980).

Upon discovery of the design deficiency, HNP performed a justification of continued operation which prohibited fuel offload from the reactor core until the FHBEES deficiency is corrected. To resolve the design deficiency in the bleed flowpath, HNP performed an engineering calculation which confirms that the filter cooling flowpath is not required. Accordingly, a modification has been developed to permanently isolate the filter cooling flowpath. The calculation evaluates the design of the adsorber section of the FHBEES units for possible iodine desorption and adsorbent auto-ignition that may result from radioactivity-induced decay heat. This evaluation concluded that the maximum temperature rise of the filter is well below the limiting temperature of the charcoal. Therefore the bleed path cooling flow was not required to prevent auto-ignition of the charcoal. With filter cooling flow not required, the interconnecting duct will be isolated at each unit and would then enable the system to meet the single failure requirements of Reg. Guide 1.52 while maintaining structural integrity. Isolation is accomplished by fabricating and installing 1/8" stainless steel plates in the interconnecting duct for each FHBEES unit. In addition, this proposed design change considered the design parameters specified in ANSI/ASME N509-1980.

Currently, Technical Specification (TS) Surveillance Requirement (SR) 4.9.12.d.4 requires verifying that the filter cooling bypass valve is locked in the balanced position. Removal of the filter cooling bypass flowpath would resolve the design deficiency reported in LER 97-021, Revision 1. Therefore, HNP requests deletion of SR 4.9.12.d.4.

Proposed Change

Harris Nuclear Plant (HNP) proposes deleting Surveillance Requirement 4.9.12.d.4 which requires verifying that the filter cooling bypass valve is locked in the balanced position..

Basis

In order to resolve the FHBEES bleed path design issue, HNP evaluated the need for a low-flow air cooling flow path in the FHBEES. An engineering calculation (HNP-M/FHB-1002) determined that the maximum temperature increase of the charcoal due to iodine decay would be well below the minimum auto-ignition or desorption temperatures, thereby, eliminating the need for cooling flow through an idle FHBEES unit. Therefore, the proposed design change to FHBEES satisfies the design commitment to Regulatory Guide 1.52, Revision 2, Regulatory Position C.3.k and the HNP FSAR assumptions for accident analysis. HNP proposes to change TS 3/4.9.12 to eliminate the cooling flowpath for FHBEES based on a similar design justification for not requiring a cooling flowpath for Control Room Area Ventilation System (CRAVS).

Similar ventilation system designs exist at HNP. For example, the cooling flowpath for the CRAVS was determined by a calculation to be unnecessary due to low radioactivity-induced heat in the adsorbent and accompanying temperature rise. Therefore, a cooling flowpath was not included in the design and, a similar Surveillance Requirement for TS 3/4.7.6 to verify the position of the "filter cooling bypass" for the CRAVS does not exist.

The following are the assumptions of the FHBEES engineering calculation (HNP-M/FHB-1002) which concluded that cooling flow is not required for FHBEES:

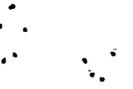
1. The heater exit temperature under design-basis operating conditions is 138°F. For

- conservatism 150°F was assumed for the initial charcoal temperature.
2. The limiting iodine liberation (desorption) temperature for charcoal is 300°F per ANSI/ASME N509-1980. The minimum ignition temperature for TEDA-impregnated charcoal is 356°F per the ERDA Handbook 76-21, page 57.
 3. The initial heat generation rate due to iodine decay is 15.7 Btu/Hr.
 4. There is no credit given in this calculation for heat loss from the charcoal. Thus, the final temperature given in this calculation is a maximum theoretical value.
 5. The specific heat of charcoal is 0.25 Btu/lb/ °F.
 6. Assume 910 lbs. of charcoal in a FHBEES unit.
 7. The half-life of Iodine-131 is 8.05 days.

The FHBEES calculation concluded that the maximum temperature increase of the carbon due to iodine decay would be well below minimum auto-ignition or desorption temperatures, thereby, eliminating the need for cooling flow through an idle FHBEES unit. The maximum temperature increase of the charcoal in the FHBEES was calculated to be 26 °F. Given a starting temperature of 150°F, the maximum charcoal temperature resulting from Iodine decay heat is 176°F. This temperature is well below the limiting iodine liberation (desorption) temperature for charcoal of 300°F and the minimum ignition temperature for TEDA-impregnated charcoal of 356 °F. Therefore, the filter cooling flowpath for FHBEES units is not required to prevent iodine liberation or charcoal ignition.

Conclusion:

Based on the engineering calculation and the proposed modification, the filter cooling bypass flowpath is not required. Therefore, TS SR 4.9.12.d.4 is no longer needed.



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TECHNICAL SPECIFICATION TS 3/4.9.12

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 deleting Surveillance Requirement 4.9.12.d.4 which requires verifying that the filter cooling bypass valve is locked in the balanced position..

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.

Fuel Handling Building Emergency Exhaust System (FHBEES) is not an accident initiating system as described in the Final Safety Analysis Report. The proposed change allows the elimination of the filter cooling bypass flowpath for FHBEES units. Engineering calculations were performed which demonstrate this filter cooling path is not required to mitigate the consequences of a fuel handling accident.

Therefore, the proposed change 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.

FHBEES is a ventilation system designed to limit off-site dose releases in the event of a fuel handling accident. FHBEES is not an accident initiating system as described in the Final Safety Analysis Report. The proposed change ensures the seismic and safety classification is maintained while not affecting another Structure, System, or Component.

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.

The proposed change to FHBEES does not affect any of the parameters that relate to the margin of safety as described in the Bases of the TS or the FSAR. Accordingly, NRC Acceptance Limits are not affected by this change.

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



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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 deleting Surveillance Requirement 4.9.12.d.4 which requires verifying that the filter cooling bypass valve is locked in the balanced position..

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 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 not result in any physical plant changes or new surveillance which would require additional personnel entry into radiation controlled areas. Therefore, the amendment has no affect on either individual or cumulative occupational radiation exposure.

ENCLOSURE 4 TO SERIAL: HNP-98-036

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PAGE CHANGE INSTRUCTIONS

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