UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 14, 2010

Chris L. Burton, Vice President
Shearon Harris Nuclear Power Plant
Carolina Power & Light Company
Post Office Box 165, Mail Zone 1
New Hill, North Carolina 27562-0165

SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1 – SECOND REQUEST FOR ADDITIONAL INFORMATION REGARDING THE LICENSE AMENDMENT REQUEST TO ADOPT NATIONAL FIRE PROTECTION ASSOCIATION STANDARD 805, "PERFORMANCE-BASED STANDARD FOR FIRE PROTECTION FOR LIGHT WATER REACTOR GENERATING PLANTS" (TAC NO. MD8807)

Dear Mr. Burton:

By letter dated May 29, 2008, as supplemented by letters dated November 14 and December 11, 2008, August 13 and 28, and October 9, 2009, Carolina Power & Light Company (the licensee), now doing business as Progress Energy Carolinas, Inc., submitted a proposed amendment for the Shearon Harris Nuclear Power Plant, Unit 1.

The proposed amendment would transition the fire protection program to a performance-based, risk-informed one based on the National Fire Protection Association Standard 805 (NFPA 805), "Performance-Based Standard for Fire Protection For Light Water Reactor Generating Plants," 2001 Edition, in accordance with Title 10 of the *Code of Federal Regulations*, Section 50.48(c). NFPA 805 allows the use of performance-based methods, such as fire modeling, and risk-informed methods, such as Fire Probabilistic Risk Assessment, to demonstrate compliance with the nuclear safety performance criteria.

The U.S. Nuclear Regulatory Commission staff has reviewed the licensee's submittals and determined that it needs additional information in order to complete its review of the requested transition to NFPA 805. Please respond to the enclosed requests by February 1, 2010, in order to facilitate a timely completion of the staff review.

Please contact me at 301-415-3178 if you have any questions on this issue, would like to participate in a conference call, or if you require additional time to submit your responses.

Sincerely,

Marlayna Vaaler, Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-400

Enclosure:
Request for Additional Information

cc w/enclosure: Distribution via ListServ

SECOND REQUEST FOR ADDITIONAL INFORMATION

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

LICENSE AMENDMENT REQUEST TO ADOPT NATIONAL FIRE PROTECTION ASSOCIATION STANDARD 805 (NFPA 805), "PERFORMANCE-BASED STANDARD FOR FIRE PROTECTION FOR LIGHT WATER REACTOR GENERATING PLANTS"

DOCKET NO. 50-400

By letter dated May 29, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML081560639), as supplemented by letters dated November 14, 2008 (ADAMS Accession No. ML083240593), December 11, 2008 (ADAMS Accession No. ML083510191), August 13, 2009 (ADAMS Accession No. ML092320120), August 28, 2009 (ADAMS Accession No. ML092580661), and October 9, 2009 (ADAMS Accession No. ML092940499), Carolina Power & Light Company (the licensee), now doing business as Progress Energy Carolinas, Inc., submitted a proposed amendment for the Shearon Harris Nuclear Power Plant, Unit 1 (HNP or Harris).

The proposed amendment would transition the fire protection program to a performance-based, risk-informed one based on the National Fire Protection Association Standard 805 (NFPA 805), "Performance-Based Standard for Fire Protection For Light Water Reactor Generating Plants," 2001 Edition, in accordance with Title 10 of the *Code of Federal Regulations*, Section 50.48(c) (10 CFR 50.48(c)). NFPA 805 allows the use of performance-based methods, such as fire modeling, and risk-informed methods, such as Fire Probabilistic Risk Assessment, to demonstrate compliance with the nuclear safety performance criteria.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the licensee's submittals and determined that it needs responses to the following requests for additional information (RAIs), whose numbering corresponds to that found in the August 6, 2009, RAI letter (ADAMS Accession No. ML092170715), in order to continue its review of the subject request.

HNP RAI 1-3.1

Implementation of Fire Protection Engineering Evaluations Post Transition

Attachment P, "Performance-Based Methods – NFPA 805 Chapter 3 – 10 CFR 50.48.(c)(2)(vii)," of the HNP NFPA 805 Transition Report (Harris Transition Report) does not fully reflect the structure and content of the approved version of Frequently Asked Question (FAQ) 06-0008, "Fire Protection Engineering Evaluations," Revision 9. Revision 9 addressed three major situations: conditions that are functionally equivalent to the NFPA 805 Chapter 3 requirement, conditions that can be shown to be adequate for the hazard for four specific sections of NFPA 805 Chapter 3, and conditions that can be shown to be acceptable using a bounding analysis approach through submittal to the NRC staff.

Attachment P appears to be a combination of the approved revision to FAQ 06-0008 (i.e., Revision 9) and the previous version (i.e., Revision 8). The attachment does address conditions that can be shown to be adequate for the hazard for the four specific sections of NFPA 805 Chapter 3 (i.e., Alarm and Detection Systems, Water-Based Suppression, Gaseous Suppression, and Passive Features). However, this attachment does not address functional equivalents or bounding evaluations for any of the conditions discussed.

The method discussion in Attachment P also refers to "referenced codes, standards, and listings," as well as "secondary features of the referenced codes, standards, and listings," with a table that lists the NFPA 805 Chapter 3 sections that fit this description. However, the endorsed version of FAQ 06-0008 no longer includes this approach.

As currently presented, Attachment P does not propose to allow functionally equivalent Fire Protection Engineering Evaluations to address NFPA 805 Chapter 3 issues. Without including this feature of FAQ 06-0008, future minor deviations that can be shown to be compliant would require a submittal to address. Please clarify whether or not this is the intent of Attachment P.

In the current form, Attachment P is not acceptable since a major portion of the approach refers to features of the previous revisions to FAQ 06-0008 that have not been endorsed. Absent revision of Attachment P to reflect other desired portions of Revision 9 to FAQ 06-0008, the NFPA 805 Safety Evaluation for HNP will only address conditions that can be shown to be adequate for the hazard for the four specific sections of NFPA 805 Chapter 3 (e.g., Alarm and Detection Systems, Water-Based Suppression, Gaseous Suppression, and Passive Features).

HNP RAI 2-16

Attachment H - Frequently Asked Question Summary Table

Attachment H to the Harris Transition Report (Nuclear Energy Institute (NEI) document NEI 04-02, "Guidance for Implementing a Risk-Informed, Performance-Based Fire Protection Program under 10 CFR 50.48(c)," Frequently Asked Question – Summary Table) contains the FAQs that were used to clarify the guidance in Regulatory Guide (RG) 1.205, "Risk-Informed, Performance-Based Fire Protection for Existing Light-Water Nuclear Power Plants," and NEI 04-02 during preparation of the HNP NFPA 805 License Amendment Request (LAR).

The NRC staff has identified a number of errors and omissions in the table included with Attachment H (e.g., referencing an incorrect Revision for FAQ 06-0008 on page H-2, out-of-date information for FAQ 07-0035 on page H-4, etc.). Accordingly, please review the FAQ Summary Table and ensure that the information presented is correct and current.

HNP RAI 2-17

Table B-1 – "Transition of Fundamental Fire Protection Program and Design Elements"

a) Process

1) The process for documenting the "Complies via Previous NRC Approval" compliance statements described in the previous RAI responses (and as followed in the B-1 Table)

does not match that described in the revised Harris Transition Report (as provided on October 9, 2009), Section 4.1, "Fundamental Fire Protection Program Elements and Minimum Design Requirements" (including Figure 4-1, "Fundamental Program and Design Elements Transition Process [based on NEI 04-02 Figure 4-2/FAQ 07-0036]"), which documents the original process. Additionally, Figure 4-1 documents the original process for handling compliance via Engineering Evaluations, and not the currently understood process. Accordingly, the licensee should ensure that the revised Harris Transition Report correctly documents the process used to populate the B-1 Table compliance statements.

In addition, please explain the use of the phrase "...or industry submittals..." in the description of excerpts provided to demonstrate previous NRC approval. Please clarify what documents are typically being referenced by this description, as well as where HNP uses these documents to support the NFPA 805 LAR.

Finally, the change to using excerpts from the HNP Final Safety Analysis Report (FSAR) instead of from the original submittal documents should be addressed, described, and justified. Please also address the potential issue of using FSAR excerpts in the B-1 Table in light of the "living" nature of the FSAR. Specifically, please provide revision information for the FSAR references used in the B-1 Table.

2) In revising the Harris Transition Report, Section 4.1, to correct the errors identified by the original RAI 2-12, the licensee has inadvertently created new errors in Section 4.1.1. Specifically, the licensee provides a bulleted list of five compliance strategies for B-1 Table entries, and then proceeds to detail the requirements for six strategies. Accordingly, please correct this discrepancy and perform a quality assurance check of Section 4.1 of the Harris Transition Report in its entirety.

b) Follow-up to HNP RAI 2-15, Part 1

The current RAI response is insufficient. Firstly, the licensee proposed, during a September 4, 2009, RAI clarification call, to provide a revision to the original RAI response and to Attachment L, "NFPA 805 Chapter 3 Requirements for Approval," of the Harris Transition Report. However, neither was included in the October 9, 2009, submittal; instead, Attachment L was deleted. Please discuss the basis for this choice. In addition:

1) The B-1 Table entry for NFPA 805 Chapter 3 Element 3.5.16, regarding the dedication of the fire protection water supply system, currently describes a non-compliant condition as compliant via a "Complies with Clarification" compliance statement. However, the NRC staff cannot approve this element in its present state, despite deletion of Attachment L. If the licensee is seeking staff approval of the condition as currently described in the B-1 Table element, formal approval should be requested, and the licensee should:

   - Provide a regulatory basis (i.e., 10 CFR 50.48(c)(2)(vii) or 10 CFR 50.48(c)(4)) as well as an appropriate regulatory justification; and

   - Provide a level of technical detail and degree of technical justification equivalent to that which would be submitted for a stand-alone licensing action.

2) The B-1 Table entry for NFPA 805 Chapter 3 Element 3.6.5, regarding the cross-connections of the seismic hose stations, currently depends upon a draft calculation to demonstrate compliance via a "Complies with Clarification" compliance statement. However, the NRC staff cannot approve this element based on a draft calculation. Accordingly, the licensee should justify compliance using a final calculation.

c) B-1 Table: Element 3.3.1.2 – Control of Combustible Materials

Please provide a positive compliance strategy statement for the parent element in the B-1 Table that addresses compliance with the requirements to develop and implement procedures for the control of general housekeeping and transient combustibles.

d) B-1 Table: Element 3.3.1.2.(6) – Regarding controls on the use and storage of flammable gases

The reference to page 9-9 of NUREG-1038, "Safety Evaluation Report related to the operation of the Shearon Harris Nuclear Power Plant, Unit No. 1," appears to be incorrect. The information on this page of NUREG-1038 concerns the fuel-load handling system. If applicable, please correct this reference accordingly.

e) B-1 Table: Element 3.3.8 – Bulk Storage of Flammable and Combustible Liquids

There is an apparent inconsistency in the code of record list located in Attachment R, "FSAR Changes," of the Harris Transition Report. NFPA 37, "Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines," which is identified in the B-1 Table, Element 3.3.8, as applying to the Diesel Oil Day Tanks, does not appear in the Attachment R list. Please rectify this apparent discrepancy.

f) B-1 Table: Element 3.3.10 – Hot Pipes and Surfaces

The NFPA 805 Chapter 3 requirement for this B-1 Table element is as follows:

> Combustible liquids, including high flashpoint lubricating oils, shall be kept from coming in contact with hot pipes and surfaces, including insulated pipes and surfaces. Administrative controls shall require the prompt cleanup of oil on insulation.

HNP's B-1 Table entry for this element provides a compliance statement of "Complies" and gives HNP procedure FPP-004, "Transient Combustible Control," Revision 22, as the reference for where this compliance is documented. However, the NRC staff has examined the cited reference and does not agree that it fully documents compliance with this NFPA 805 Chapter 3 requirement. Accordingly, please rectify this inconsistency, paying particular attention to the final sentence of the associated requirement.

g) B-1 Table: Element 3.3.12 – Reactor Coolant Pumps

The NRC staff has determined that this parent element contains requirements related to seismic and other accident / off-normal conditions that are not addressed in the detailed sub-parts to this element. Accordingly, please provide a compliance statement and

strategy that addresses the seismic (and other) requirements contained in the parent element. Previous NRC guidance on this issue can be found in Branch Technical Position (BTP) CMEB [Chemical Engineering Branch] 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants," Position C.7.a(1)(e), regarding the fire protection requirements for the reactor coolant pump oil collection system in primary and secondary containment during normal operation.

h) B-1 Table: Element 3.4.2 – Pre-Fire Plans

Please provide a reference to where Open Item No. 9, as identified in the August 28, 2009, HNP RAI response, is documented (as required by Figure 4-1), as well as a commitment regarding when it will be closed / completed.

i) B-1 Table: Element 3.6.4 - Standpipe and Hose Station Earthquake Provisions

Please provide a description of the "alternative means of manual firefighting" described in the referenced compliance document as one of the bases for approval of the granted deviation. This detail should be provided for each fire zone where the deviation is credited.

j) B-1 Table: Element 3.7 – Fire Extinguishers

The August 28, 2009, HNP RAI response letter identifies an Open Item that would extend a code compliance evaluation to additional plant buildings. However, this situation is incorrectly identified in the associated B-1 Table element as a compliant configuration via a "Complies with Clarification" compliance statement. Accordingly, the licensee should correct the associated B-1 Table entry, appropriately document the Open Item, and provide a commitment regarding when it will be closed / completed.

k) B-1 Table: Element 3.11.3 – Fire Barrier Penetrations

1) It appears that HNP has not completely documented all of the appropriate deviations for this element. One example is the fire barrier protective device deviation detailed in NLS-86-219, "Fire Protection – Deviations from BTP 9.5-1," which is not included in this element. Please ensure that all appropriate deviations are referenced in the B-1 Table.

2) It appears to the NRC staff that the second referenced deviation does not apply to this element. Instead, it appears to be a NFPA 805 Chapter 4 separation issue (i.e., a missing barrier). If this is the case, the second deviation should be removed. If it is not the case, it appears that similar deviations should be documented here as well.

HNP RAI 3-23.m.1

Information Notice (IN) 92-18 – "Potential for Loss of Remote Shutdown Capability During a Control Room Fire"

In the August 28, 2009, HNP RAI response letter, the licensee's responses to HNP RAI 3-23.m and HNP RAI 3-31 state that a modification will ensure that following control transfer from the control room to the auxiliary control panel (ACP) in the event of a fire requiring the use of the

ACP, valves 1AF-137, 1AF-143, and 1AF-149 are isolated from the 305 foot elevation and a clean fuse is available if the primary fuse has already been blown.

However, the responses do not discuss any potential vulnerability with respect to fire-induced damage to the valves as a result of by-passing the torque and/or limit switches as described in NRC IN 92-18. Accordingly, please describe how these valves were evaluated against the issues discussed in IN 92-18. If the valves are indeed susceptible to damage prior to control transfer, provide a performance-based analysis demonstrating the acceptability of the risk, defense-in-depth, and safety margins for the affected valves.

HNP RAI 3-24.1

Limiting Conditions for Operation (LCOs) for New Equipment

HNP RAI 3-24 requested a list of structures, systems, and components (SSCs) not currently covered by existing Technical Specification (TS) LCOs, and requested that the licensee propose TS LCOs or describe the administrative controls that will assure availability of the new equipment, including required compensatory measures to be taken when the equipment is not available. The response provided by the licensee stated that FPP-013, "Fire Protection – Minimum Requirements, Mitigating Actions, and Surveillance Requirements," will continue to track safe shutdown equipment not covered by the HNP TS. However, the NRC staff has the following concerns regarding the response to HNP RAI 3-24:

a) The Alternate Seal Injection System (ASI) has not been characterized as "safe shutdown equipment" in the NFPA 805 LAR. It is not clear whether the ASI is being installed as part of the Fire Protection Program or as Balance of Plant equipment since it is being credited for risk reductions in both areas. Accordingly, for the new ASI equipment, please identify the administrative program that will address the system (Fire Protection Program, Technical Requirements Manual, Maintenance Rule, etc.) and provide a description of the administrative controls that apply to it, including any LCO-type limitations, allowed out of service time (AOT), and required actions when the AOTs are exceeded.

b) For those SSCs that are covered by FPP-013, please provide a description of the administrative controls applied (i.e., exactly what does "track safe shutdown related equipment not covered by HNP TS" mean?).

c) Please describe the relationship, if any, between FPP-013 and the NFPA 805 Monitoring Program. Is there any potential for a plan to adjust LCO and/or AOT time frames based on Fire Probabilistic Risk Assessment (PRA) results?

HNP RAI 3-65.1

Electrical Coordination (Installed Fuses)

In the August 28, 2009, HNP RAI response letter, the licensee's response to HNP RAI 3-65 states that the plant was originally designed with general coordination to ensure that a fault on a cable would not damage the cable itself. The response goes on to state that a fuse control

program is in place to administratively control fuse replacement such that the original fuse coordination is maintained. Please address the following concerning this response:

a) How long has the fuse control program been in place?

b) Has the fuse control program been in place since construction?

If the fuse control program has been in place since construction, please state that HNP is in compliance with NFPA 805 Section 2.4.2.2.2.

If the fuse control program has not been in place since construction, please describe how the licensee plans to provide reasonable assurance that the fuses currently installed will provide the required level of protection.

HNP RAI 3-69

Identified Deviation for Exterior Penetrations Lacking Fire Dampers

In Section 2.2, "NRC Acceptance of HNP Fire Protection Licensing Basis," of the Harris Transition Report, several deviations are noted as having been previously granted by the NRC. Deviation 8 is identified on Page 10 of the Harris Transition Report as "a deviation to the requirements of NFPA-90A, ["Standard for the Installation of Air-Conditioning and Ventilating Systems,"] for providing fire dampers at exhaust and intakes at external walls, stairs, and roofs." It is also noted as a licensing action to be carried forward on Page K-38 of Attachment K, "Existing Licensing Action Transition," of the Harris Transition Report. Attachment K identifies the affected fire areas as Switchgear Rooms A and B in the Reactor Auxiliary Building and Emergency Service Water Pump Rooms A and B.

In the entry on Page 10 of the Harris Transition Report, HNP letter NLS-86-219, "Fire Protection – Deviations from BTP 9.5-1," is identified as providing supplemental information regarding the deviation. However, this letter does not appear to contain this information. Accordingly, please provide a corrected supplemental reference for this deviation.

Additionally, please provide details about where (wall or roof, as well as other location details) the penetrations pierce the exterior membranes of the affected fire areas. Include the relative spacing between the penetrations in the related pairs of fire areas (i.e., what is the distance between the openings in the two switchgear rooms as well as between the openings in the two pump rooms). In the case of the switchgear rooms, please provide the distance between the exterior openings and the nearest fire area of concern from an exposure fire standpoint (i.e., Turbine Building). Based on the provided location details, also provide a technical justification for the acceptability of these openings not having appropriately rated fire dampers installed.

HNP RAI 3-70

Table 4-8 – "Required Suppression and Detection Systems"

The NRC staff has identified a number of apparent deficiencies in Table 4-8 of the Harris Transition Report. Accordingly, please address the following:

a) It does not appear that HNP considers the thermal detection systems installed in conjunction with pre-action and multi-cycle suppression systems to be installed detection systems. Some example fire zones where this is the case are: 1-A-1-PA (Reactor Auxiliary Building (RAB) Elevation 190'), 1-A-3-COR (RAB Elevation 236'), 1-A-1-PB (RAB Elevation 190'), 1-A-3-COMC (RAB Unit 1 – Analysis Area D), 1-D-DTA (Diesel Generator Fuel Oil Day Tank A Enclosure), 1-D-DTB (Diesel Generator Fuel Oil Day Tank B Enclosure), 1-G-314 (Turbine Generator Building), and 5-F-2-FPC (Fuel Handling Building Fuel Pool Heat Exchangers).

   It is the NRC staff's position that these thermal detectors constitute detection systems. Additionally, these thermal detectors are called out by HNP in deviation requests (e.g., the penetration protection deviation request identified in HNP letter NLS-86-219) as installed detection systems. Given this apparent inconsistency, HNP should perform an extent of condition review to ensure that all installed fire protection systems are correctly identified.

b) A number of fire protection systems identified in HNP-retained licensing actions are not denoted in Table 4-8 as required systems, or do not appear in the table at all.

   Examples from the deviation identified in HNP letter NLS-86-219:

   - Table 2 of NLS-86-219 identifies an ionization detection system installed in fire zone 12-A-7-HV (Heating, Ventilating Room, elevation 324 feet), which is missing dampers FD-W-10, -11, -12, and -13. However, Table 4-8 of the Harris Transition Report states that the detection system installed in the fire zone is not required.

   - Table 2 of NLS-86-219 identifies an ionization detection system installed in fire zone 5-F-2-DEC (Decontamination Area and Transfer Tank, elevation 236 feet), which is missing damper FD-73. However, Table 4-8 of the Harris Transition Report states that there are no detection systems installed in the fire zone.

   - Table 3 of NLS-86-219 identifies a multi-cycle suppression system and a thermal detection system installed in fire zone 1-G-261 (Turbine Generator Building, Ground Floor, elevation 261 feet), which is missing bus duct penetration seals BD-5, -6, -9, -10, -17, and -18. However, Table 4-8 of the Harris Transition Report states that the suppression system is not required.

   Given these apparent inconsistencies, HNP should perform an extent of condition review to ensure that all of the fire protection systems identified in the licensing actions being carried forward are correctly identified and dispositioned.

c) Please describe HNP's process for demonstrating compliance with the NFPA 805 Chapter 3 requirements for systems determined to be required (as denoted by one of the "Yes" criteria in Table 4-7 of the Harris Transition Report, which shows the approach to address the term "required" system per the NFPA 805 requirements), but which are not currently evaluated in an existing code compliance evaluation referenced in the appropriate B-1 Table element.

d) There may be more than one suppression or detection system installed in a fire zone. Given that this may be the case, when Table 4-8 has a "Yes" in the "Suppression a

Required System?" or "Detection a Required System?" field, does that indicate that all systems installed in the fire zone are required? If it does not, please list all installed systems and indicate which ones are required for each fire zone.

e) Where fire protection systems are required, HNP should document the reasons (i.e., all of the applicable "Yes" criteria from Table 4-7) that the systems are required for the fire zone.

f) For fire zones where either a detection or suppression system is not installed, Table 4-8 contains a shaded space in the "Required System?" column. HNP should correct these columns to accurately document whether or not a system is required in the subject fire zone.

HNP RAI 3-71

Use of the Storm Drainage System for Suppression Water Runoff

Attachment C, "NEI 04-02 Table B-3 – Fire Area Transition," of the Harris Transition Report credits the use of the Storm Drainage System for suppression water runoff in the section titled "Fire Suppression Activities Effect on Nuclear Safety Performance Criteria" for the following fire areas:

1-A-BAL-A2	1-A-BAL-B3	1-A-BAL-J
1-A-BAL-A3	1-A-BAL-B4	1-A-CSRA
1-A-BAL-A4	1-A-BAL-B5	1-A-CSRB
1-A-BAL-B1	1-A-BAL-C	
1-A-BAL-B2	1-A-BAL-D	

Please describe how the Storm Drainage System is used in this context. In the discussion, please also explain how the use of the Storm Drainage System meets the requirements for achieving the Radioactive Release Performance Criteria.

HNP RAI 3-72

Control Room Delta Risk

Table G-2, "Disposition of Pre-Transition Operator Manual Actions," of the Harris Transition Report lists 10 recovery actions required for fires that occur in Fire Area 12-A-CR – Main Control Room. The use of these 10 recovery actions to achieve the nuclear safety performance criteria does not meet the deterministic requirements of NFPA 805 Section 4.2.3, "Deterministic Approach." However, Fire Area 12-A-CR credits the use of the performance-based approach in accordance with NFPA 805 Section 4.2.4, "Performance-Based Approach."
Since a Fire PRA is being utilized to assess the risk of variances from the deterministic requirements (VFDRs), NFPA 805 Section 4.2.4.2, "Use of Fire Risk Evaluation," applies to the assessment of the performance-based alternative. Accordingly, the unprotected cables associated with the components being addressed by the recovery actions required for Fire Area 12-A-CR should be considered VFDRs since they do not meet the deterministic requirements.

Although a Plant Change Evaluation may not be required because the existing deterministic licensing basis has approved the use of the operator manual actions that are being transitioned

as recovery actions, a Fire Risk Evaluation in accordance with NFPA 805 Section 4.2.4.2 is required. The Fire Risk Evaluation performed in accordance with NFPA 805 Section 4.2.4.2 should compare the risk associated with implementation of the deterministic requirements with the risk associated with the proposed alternative (i.e., use of the recovery actions).

In addition, NFPA 805 Section 4.2.4 requires that when the use of recovery actions has resulted in the use of this approach (i.e., the performance-based approach), the additional risk presented by their use shall be evaluated. Section G.5.3.2, "Results," of the Harris Transition Report states that: "Functional failures are not recovered in the Fire PRA by modeling the recovery actions for alternative shutdown fire scenarios. Therefore, the risk in the applicable areas provides a bounding assessment. Attachment Y[, "NFPA 805 Transition Risk Insights,"] provides the details of the fire area analysis."

This passage appears to be stating that neither individual nor fire area delta risk calculations were performed to assess the additional risk of alternative shutdown recovery actions in Fire Area 12-A-CR. Using the bounding analysis approach described should result in the delta risk being set equal to the fire area risk. For the control room, this would result in the delta risk being equal to the full fire area fire risk (i.e., 4.48E-06 core damage frequency (CDF), 4.44E-07 large early release frequency (LERF)). This delta risk is not only the additional risk presented by the use of recovery actions, but also the delta risk of the associated VFDRs for not protecting the cables for those components associated with the recovery actions.

Given the above discussion, the licensee should treat the delta risk information as follows: 1) the delta risk should be added onto the risk change due to NFPA 805 transition as discussed in Section Y-2, "Risk Change Due to NFPA 805 Transition," of the Harris Transition Report; 2) the delta risk should be discussed in the Fire Area 12-A-CR section of Attachment Y, which currently states that the delta risk for the control room is zero; and 3) the control room risk should be included as the delta risk for VFDRs in the Fire Area 12-A-CR portion of Attachment Y. Accordingly, please address these concerns for Fire Area 12-A-CR.

HNP RAI 3-73

Suppression Systems Credited in Fire PRA But Not Classified as Required in Table 4-8

The American Society of Mechanical Engineers (ASME) and American Nuclear Society (ANS) combined PRA standard includes requirements for the consideration of fire impacts to structural steel (SR FSS-F1). Large lubricating oil fires have been evaluated for the potential to impact structural steel in the HNP Turbine Building.

Attachment 8 of Calculation HNP-F/PSA-0079, "Harris Fire PRA – Quantification Calculation," Revision 1 states: "Fire scenarios involving significant oil hazards in the Turbine Building would be the only fires capable of causing significant damage. Dedicated water spray (deluge) suppression systems are provided near the large oil related fire hazards in the Turbine Building including the turbine lube oil reservoir, the condensate pumps, the steam generator feed pumps, the condensate booster pumps and the hydrogen seal oil unit. These suppression systems provide assurance that the fire affects remain localized to the hazard."

Attachment 8 of Calculation HNP-F/PSA-0079, Revision 1, goes on to say: "Going beyond the prototypical fire scenario described in the ANS Standard, a review of ignition sources (oil

hazards) with the five highest heat release rates noted in the HNP Turbine Building Fire PRA analysis identified oil spills associated with the [Digital Electro-Hydraulic] (DEH) Pump Skid, and Condensate Booster Pumps as the largest contributors. In both cases the water spray suppression systems provided for the equipment, and the inherent venting capability of the open Turbine Building design will prevent catastrophic structural steel failure, and will limit worst case damage to the localized area(s) of the involved equipment."

The last sentence implies that the major oil hazard suppression systems in the HNP Turbine Building are credited as the means of addressing the risk for structural collapse of the building.

Section 4.8.4, "Required Systems and Features," of the Harris Transition Report provides the process used to identify those fire detection and suppression systems that are required to meet the nuclear safety performance criteria. Table 4-8 has been provided to document the results of this review. Table 4-8 includes some, but not all of the suppression systems currently installed in the HNP Turbine Building. For instance, Fire Zone 1-G-240 – Turbine Generator Building Basement, and Fire Zone 1-G-314 – Turbine Building Operating Floor, have installed suppression systems that are not required to meet the nuclear safety performance criteria.

This appears to be inconsistent with the statements made in calculation HNP-F/PSA-0079, Revision 1, that imply the major oil hazard suppression systems in the turbine building are credited to prevent catastrophic structural steel failure, which is a requirement of the ASME/ANS combined PRA standard. For example, based on the plant layout drawings observed during the Harris site audit, it appears that the condensate pumps are located in a pit on the 240 foot elevation of the HNP Turbine Building. The fire suppression system installed to protect the condensate pumps appears to be credited in the Fire PRA to prevent a potential turbine building collapse, but is not in itself a required system. Note that one of the considerations used in determining the required systems is "By Performance Monitoring Group in Expert Panel."

Accordingly, please either change the status of the fire suppression systems installed to protect the major oil hazards to "required" in Table 4-8, or provide a justification for classifying these suppression systems as not required.

HNP RAI 3-74

Use of the Performance-Based Approach with no Change Evaluation

NFPA 805 Section 2.2.8, "Performance-Based Approach," states:

> The performance-based approach to satisfy the nuclear safety, radiation release, life safety, and property damage / business interruption performance criteria requires engineering analyses to evaluate whether the performance criteria are satisfied.

Table 4-5, "Fire Area Compliance Summary," of the Harris Transition Report documents that Fire Areas 1-A-ACP – Auxiliary Control Panel Room, 12-A-CRC1 – Control Room Complex, and 12-A-HV&IR – Heating, Ventilating, and Instrument Repairs, Reactor Auxiliary Building, utilized the performance-based approach in accordance with NFPA 805 Section 4.2.4 but do not have associated Plant Change Evaluations to document the acceptability of this approach.

The NRC staff reviewed the Fire Safety Analyses (FSAs) performed for these fire areas and noted that the Change Evaluation section for each of these associated calculations had been deleted during the latest revision.

The staff also noticed that: 1) Fire Area 1-A-ACP includes four VFDRs that require performance-based analyses to evaluate whether the performance criteria are satisfied; 2) Fire Area 12-A-CRC1 includes six VFDRs that require performance-based analyses to evaluate whether the performance criteria are satisfied; and 3) Fire Area 12-A-HV&IR includes one VFDR that requires a performance-based analysis to evaluate whether the performance criteria are satisfied.

Accordingly, the licensee should either revise the analyses and NFPA 805 LAR for these fire areas to credit the deterministic approach in accordance with NFPA 805 Section 4.2.3 (including any required physical modifications), or provide justification that the existing engineering analyses adequately meet the NFPA 805 Section 4.2.4 performance-based approach. One method that is acceptable to the NRC staff is to perform the required engineering analysis demonstrating the ability to meet the nuclear safety performance criteria using either a qualitative or quantitative evaluation, and subsequently revise the NFPA 805 LAR to properly document the performance-based analysis.

HNP RAI 4-1.1

Radioactive Release

a) Reactor Containment Building Equipment Hatch

The NRC staff finds that the qualitative justification provided in the August 28, 2009, HNP RAI response letter for part (e) of HNP RAI 4-1, regarding radioactive release from containment during low power and shut down conditions, as well as the information provided in Attachment E, "NEI 04-02 Table G-1 – Radioactive Release Transition," of the Harris Transition Report for FPP-012-01-CNMT, "Containment Building Fire Pre-Plan," regarding the Containment Equipment Hatch during non-power operational modes, is insufficient.

Please provide a detailed summary of the analysis / technical justification supporting an indefinite closure time for the containment hatch while fuel is off-loaded. Otherwise, provide a detailed summary of the analysis / technical justification that determines the necessary hatch closure time. The analysis / technical justification should take into account plant-specific equipment arrangement and containment geometry. Please also include a description of the key assumptions for the analysis / technical justification in the summary.

b) Living Radioactive Release Program

Please describe the configuration controls in place to ensure that the Radioactive Release Goals/Objectives/Performance Criteria will continue to be met considering the possibility that areas that were not contaminated at the time of the NFPA 805 transition review (and which were consequently screened out) may become contaminated in the future due to plant operational events. One example of this might be a steam generator tube leak that contaminates areas that are normally expected to be uncontaminated.

HNP RAI 5-4.1

Qualification of Users

In response to HNP RAI 5-4, the licensee stated in the August 13, 2009, HNP RAI response letter that training guides had been established for personnel performing Fire Probabilistic Safety Assessment (PSA) and Fire Protection. The response further states that the qualification and training program at HNP is accredited by the Institute of Nuclear Power Operations (INPO).

Please elaborate on how the qualification and training program will ensure that personnel performing fire modeling in the future will meet the requirements of NFPA 805 Section 2.7.3.4, "Qualification of Users," with regard to being competent in that field and experienced in the application of fire modeling techniques and methods as they relate to nuclear power plants, nuclear power plant fire protection, and power plant operations.

HNP RAI 5-14.1

Sensitivity to Cutting and Welding Fires

In the response to HNP RAI 5-14, the licensee provided a sensitivity analysis to estimate the risk contribution of transient fires due to cutting and welding by applying the ignition frequencies from NUREG/CR-6850, "EPRI/NRC-RES [Research] Fire PRA Methodology for Nuclear Power Facilities," for the frequency bins related to transient cutting and welding fires (bins 6, 24, and 36) to the general transient source scenarios (bins 3, 7, 25, and 37), and assuming a continuous fire watch. The results of this sensitivity analysis were presented in a table.

However, it is unclear what non-suppression probabilities were assumed in the sensitivity analysis when the frequencies for the bins related to transient cutting and welding fires (bins 6, 24, and 36) were substituted for those corresponding to the general transient source scenarios (bins 3, 7, 25 and 37). Since the sum of the ignition frequencies for bins 6, 24, and 36 (0.0228 per reactor-year) is comparable to that for bins 3, 7, 25, and 37 (0.0243 per reactor-year), any differences should result primarily from the choice of non-suppression probabilities. If the transient fire non-suppression probabilities from NUREG/CR-6850 were assumed, then these should bound those for cutting and welding in order for the sensitivity analysis to confirm the licensee conclusion of no significant plant impact due to a transient cutting and welding fire.

Accordingly, please clarify what non-suppression probabilities were employed for the sensitivity analysis and discuss if these bound the assumed non-suppression probabilities for cutting and welding so as to support the licensee's conclusion in the current response to HNP RAI 5-14.

HNP RAI 5-18.1

Screening Thresholds for Hot Gas Layers (HGLs)

One part of HNP RAI 5-18 addressed a statement from Section 5.8.3, "Detailed Qualitative Assessment (Step 3)," of calculation HNP-F/PSA-0079, Revision 1. The RAI noted that the screening values cited in the statement are based on HGL ignition frequencies in compartments for which the conditional core damage probability (CCDP) could be close to 1.0, or have the potential to increase to values close to 1.0 due to failures in the propagated compartment.

Accordingly, the request was made to provide the basis for the "no further evaluation is performed" screening value of less than 1.0E-7 per year. In addition, the request asked the licensee to discuss the correspondence, if any, between the less than 1.0E-7 per year screening criterion and that for the less than 1.0E-6 per year screening criterion when considering the HGL. However, in the response the licensee appears to have addressed the use of "1.0E-7 per year rather than 1.0E-8 per year" as the screening criterion, instead of "1.0E-6 per year rather than 1.0E-7 per year," as requested.

Accordingly, please provide the basis for the "no further evaluation is performed" screening value of less than 1.0E-7 per year. In addition, discuss the correspondence, if any, between the less than 1.0E-7 per year screening criterion and that for the less than 1.0E-6 per year screening criterion.

HNP RAI 5-22.1

Spurious Actuation Probabilities

In the response to HNP RAI 5-22, the licensee discussed the use of a spurious actuation probability of 0.30 instead of 0.60 as the best estimate for failure mode probability in the ignition frequency calculations throughout Section 5.3, "Main Control Board Fire Initiating Events – Successful Fire Suppression," and Section 5.4, "Main Control Board Fire Initiating Events – Fire Suppression Failure Scenarios," of Attachment 4, "Main Control Room Analysis," to calculation HNP-F/PSA-0079, Revision 1, for the HNP Main Control Board (MCB) analysis.

Although justifying the validity of this spurious actuation probability for motor operated valves (MOVs), the licensee stated that the use of 0.30 is non-conservative for air operated valves (AOVs) with direct current (DC) solenoid controllers, and that this will be corrected when calculation HNP-F/PSA-0079 is updated. The licensee further responded that the conclusions of the NFPA 805 LAR are not expected to be adversely impacted because there are other offsetting conservatisms, a list of which was provided.

However, with respect to the use of the 0.30 spurious operation probability for AOVs with DC solenoid controllers instead of the appropriate value of 0.60, the NRC staff questions the claim that the conclusions of the NFPA 805 LAR would not be expected to be adversely impacted because of offsetting conservatisms. For example, relaxation of one of the cited conservatisms – no consideration of hot short duration – may not provide any reduction in overall hot short probability for DC-powered circuits. Additionally, relaxation of the cited conservatism of not crediting installation of incipient detection may not provide a sufficient offset because the effectiveness of incipient detection is highly dependent on the specific conditions of the installation, maintenance of the system, nature of the ignition sources, etc.

Accordingly, please provide a basis for the conclusion of no adverse impact from the non-conservative use of the 0.30 hot short probability for AOVs rather than 0.60, including a sensitivity analysis that is not dependent on "offsetting conservatisms."

HNP RAI 5-30.1

Uncertainty Analysis

In the response to HNP RAI 5-30, the licensee states that, with respect to the disposition for finding and observation (F&O) FSS-E3-1 in Attachment X, "Fire PRA Quality," of the Harris Transition Report, they "did not perform an overall statistical uncertainty analysis such as that typically performed for internal events because of software lirnitations with the methodology used to quantify the Fire PRA. The impact of this is not expected to influence the decisions related to this application."

While "software limitations" (i.e., the use of FRANC) may preclude an exact reproduction in the Fire PRA of the type of parametric uncertainty analysis performed for the internal events model of record, it should still be feasible to examine the effect of uncertainty on at least those human failure probabilities more likely to dominate the fire risk, even if this is accomplished through a means independent from that employed by using the internal events PRA software.

Accordingly, please provide a firmer basis for the conclusion that the uncertainties would not be expected to influence the decisions related to the NFPA 805 LAR.

HNP RAI 5-31.1

Sensitivities on Reactor Coolant Pump (RCP) Seal Loss of Coolant Accidents (LOCAs) and Internal Events PRA Issues

HNP RAI 5-31 consisted of two items related to Table 15.1, "Amended Summary of Assumptions and Sources of Uncertainty in the HNP Fire PRA," of Attachment 15, "Identification of Sensitivity Analyses for HNP NFPA 805 Change Evaluations," to calculation HNP-F/PSA-0081, "Harris Fire PRA – Support for NFPA 805 Transition," Revision 1, which includes Assumptions 30, 31, and 32 regarding the fire risk model and cable selection. The licensee provided a response to both of these items.

While satisfied with the response to the part of item (1) addressing Assumption 32 because there are no VFDRs associated with the cables in question, the NRC staff still has the following concerns: 1) With regard to the part of item (1) addressing Assumption 30, the licensee cites use of the Westinghouse RCP Seal LOCA Model, but does not address its role in the expectation of having no masking effects. 2) With regard to item (2), the licensee appears to conclude that sensitivities performed for the internal events model adequately address sensitivities that could be considered for the Fire PRA, but does not elaborate.

Please provide additional discussion regarding the role of the Westinghouse RCP Seal LOCA Model in item (1) and the conclusion related to item (2), as identified above.

HNP RAI 5-33.1

Incipient Detection System

In the response to HNP RAI 5-33, the licensee provided an additional sensitivity analysis for Section 3.3.5.2, "Sensitivity Issue 7: Incipient Fire Detection in Low Voltage Cabinets," of

Attachment 16, "Impact Assessment of Key Sensitivity Issues," to calculation HNP-F/PSA-0081, Revision 1. Three cases were considered: (1) Incipient Condition Exists (SI) = 0.001, Very Early Warning Fire Detection Systems (VEWFDS) Reliability (ID) = 0.005, Plant Response to Event (IP) = 0.001; (2) SI = 0.01, ID = 0.005, IP = 0.05; and (3) SI = 0.01, ID = 0.01, IP = 1.0; with the last case not being considered credible because of the use of the 1.0 value for IP.

While the NRC staff recognizes the licensee's reluctance to consider the most pessimistic (third) sensitivity case as credible, the staff also notes that in the previous case (second) the applicant was willing to consider sensitivities in the parameters SI and IP that increased their values from the base (first) case by factors of 10 and 50, respectively, but not to increase the value for parameter ID, which relates to the reliability of the VEWFDS.

For consistency with the other parameters, please consider expansion of at least the second case to increase the value of parameter ID to at least 0.05 (factor of 10 relative to base case). Also, discuss how the post-transition monitoring program will assure VEWFDS unreliability (parameter ID) will be kept below the level needed to assure the effectiveness being credited.

HNP RAI 5-36.1

Uncertainties and Software Limitations

In the response to HNP RAI 5-36, the licensee states that, with respect to the disposition for F&O FSS-E3-1 in Attachment X of the Harris Transition Report, "the F&O relates to statistical uncertainties. The modeled basic events include a parameter for incorporating the error factors. Harris did not perform an overall statistical uncertainty analysis such as that typically performed for internal events because of software limitations with the methodology used to quantify the fire PRA. The impact of this is not expected to influence the decisions related to this application."

While "software limitations" (i.e., the use of FRANC) may preclude an exact reproduction in the Fire PRA of the type of uncertainty analysis performed for the internal events model, it should still be feasible to examine the effect of uncertainty using a surrogate method – perhaps a modified sensitivity analysis – in order to address potential uncertainties and support the conclusion that "the impact is not expected to influence the decisions related to this application."

Accordingly, please provide a firmer basis for the conclusion that the uncertainties would not be expected to influence the decisions related to the NFPA 805 LAR.

HNP RAI 5-37.1

Going Forward Fire PRA Improvements

In the response to HNP RAI 5-37, the licensee states that, with respect to the disposition for F&Os FQ-F1-1, FQ-A4-02, FQ-D1-01, and FQ-F1-01 in Attachment X of the Harris Transition Report, "HNP will continue to be involved with the issues surrounding fire PRA development and the associated uncertainties. Improvements in the methods and data developed through industry and regulatory efforts will be incorporated in future revisions to the HNP Fire PRA. These improvements will be reflected in the 'going-forward' applications."

The NRC staff recognizes that these "improvements" would suffice to address the concern in HNP RAI 5-37 post-transition if such improvements are indeed available when the "going forward" Fire PRA is in effect for post-transition change evaluations.

However, since this expectation may not necessarily be fulfilled, please discuss current plans to address the possibility of such improvements not being available at the anticipated time, as well as the impact this would have, if any, on post-transition change evaluations.

HNP RAI 5-41

Impact of Plant Changes Not Yet in the PRA Model on Change Evaluations

In the NFPA 805 LAR descriptions of administrative controls for PRA model updates, there was no discussion of how plant changes not yet incorporated into the PRA model will be addressed in Plant Change Evaluations.

Accordingly, please describe the process for evaluation of such plant changes, including any screening criteria, expert panel consideration, or other disposition methods, when the changes are not yet included in the PRA model used to support a change evaluation.

HNP RAI 5-42

Changes Made to the HNP Fire PRA Since the NRC Staff Audit

The February 2008 audit conducted by the NRC staff identified elements of the PRA standard which were satisfactorily met by the existing HNP Fire PRA. However, the staff identified that due to the incomplete status of major elements of the Fire PRA, the conclusion could not be reached that once the Fire PRA was complete these items would not be adversely impacted.

Therefore, the staff suggested that a full peer review of the HNP Fire PRA model be conducted when the Fire PRA was complete. The licensee declined to conduct such a review, and has used the NRC staff's disposition of acceptability for these elements in February 2008 to justify the technical adequacy of the HNP Fire PRA model. A focused scope Fire PRA review was conducted only for those items found deficient during the February 2008 audit.

In order to assist the NRC staff in reaching the conclusion that the HNP Fire PRA model continues to be acceptable, please identify the changes made to the Fire PRA model since the February 2008 audit and provide the basis for concluding that these changes do not impact those standard elements found acceptable during the NRC review.

HNP RAI 5-43

Inter-Cable and Three-Phase Hot Short Assumptions

a) Inter-cable and three-phase hot shorts were not considered for having the potential to lead to containment bypass and the possibility of a large early release from containment. The licensee indicates that the issue has been resolved by evaluation of each potential containment release pathway for multiple spurious operations, and consideration by an expert panel of the potential consequences of more than two spurious operations. Although

the corresponding supporting requirements (SRs) (Cable Selection (CS)-A7 and CS-A8) were reviewed by the Focused Scope Peer Review Team and found to be acceptable, it is not clear that this disposition addresses inter-cable as opposed to intra-cable hot shorts.

Accordingly, please provide a clarifying description of the above process, including a discussion of whether or not the two types of hot shorts were considered and, if not, why this was deemed acceptable during the Focused Scope Peer Review.

b) The Focused Scope Peer Review finding associated with SR Circuit Failure Analysis (CF)-A1 noted that contributions to hot short probability do not necessarily include both intra- and inter-cable hot shorts. The licensee indicates that no change to the Fire PRA method was made based on the inclusion of conservatisms in the hot short probabilities.

Please provide a discussion of these conservatisms in the hot short probabilities and the basis for not changing the Fire PRA method, including appropriate justification.

HNP RAI 5-44

Justification of SRs that Are Either Met or Capability Category (CC)-I

NRC Staff Review Findings associated with the following SRs, as dispositioned by the Focused Scope Peer Review Team to be satisfied at either the Met or CC-I levels, were deemed acceptable by the licensee:

(a) Fire Scenario Selection and Analysis (FSS)-D7: based on a review of the licensee's calculations and the treatment of fire detection system unavailability. It is not clear why an outlier performance by a detection system might not result in a significant risk increase for HNP, which is the basis for CC-II.

(b) FSS-D9: based on no treatment of the potential for smoke damage to equipment credited in the Fire PRA. It is not clear why there is any plant-specific basis to disregard smoke damage when the PRA consensus standard includes this supporting requirement. Consequently, the licensee's assertion that the risk associated with smoke damage to equipment credited in the Fire PRA is not significant has not been justified.

(c) Fire Ignition Frequency (IGN)-A4: based on a lack of consideration of plant-specific experience for fire events required for CC-II. It is not clear that failure to consider plant-specific fire experience is conservative, and so the justification is not adequate.

(d) Fire Risk Quantification (FQ)-F2 (note that no Finding was identified): based on completing the referenced requirements of the internal events PRA standard to document any non-applicability and identify the non-applicable requirements. No basis for not meeting the internal events PRA standard requirements is provided.

Given the above discussion, please provide the bases for concluding that the SRs associated with these Findings are acceptable at the Met or CC-I levels.

HNP RAI 5-45

Exposed Structural Steel

For CC-I/II, SR FSS-F1 states: "DETERMINE if any locations within the Fire PRA global analysis boundary meet both of the following: (a) exposed structural steel is present; (b) a high-hazard fire source is present in that location AND, if such locations are identified, SELECT one or more fire scenario(s) that could damage, including collapse, the exposed structural steel for each identified location."

The licensee indicates that it identified and assessed qualitatively the most limiting location and fire scenario, which was the turbine building and a large turbine lube oil fire, thereby implying that if the most limiting fire scenario would not damage structural steel, there would be no need to examine lesser fire scenarios in other locations.

Accordingly, please discuss whether the evaluation for potential damage to exposed structural steel was performed for ALL locations meeting the two requirements stated above, and if not, please justify the decision to only assess the most limiting fire scenario and location.

HNP RAI 5-46

SRs Dispositioned Without a Focused Scope Peer Review

The findings from the February 2008 NRC staff audit associated with SRs FQ-E1, FQ-F1, and FQ-F2 have been dispositioned as now satisfied, but the Focused Scope Peer Review Team apparently did not review these items, or the review confirmed that the items were valid but corrective action was not complete.

Since these items were not resolved and subsequently reviewed by the Focused Scope Peer Review Team, please provide additional technical details of the specific changes made to resolve the issues involved with SRs FQ-E1, FQ-F1, and FQ-F2.

HNP RAI 5-47

Cable Routing for Instrumentation

Findings associated with SRs Equipment Selection (ES)-C1, Post-Fire Human Reliability Analysis (HRA)-B3, and HRA-C1 deal with the assumption of independent cable routing for redundant instrumentation associated with operator manual actions. It is not clear from the resolution of these items whether this remains an assumption, or whether additional cable routing data was obtained.

Accordingly, please describe how this issue is being addressed, either by assuming independent cable routing, or by verification of cable routing, and provide the basis for why the assumption is valid (if still applicable).

HNP RAI 5-48

Seismic – Fire Analysis

Attachment 7, "Seismic – Fire Analysis," to calculation HNP-F/PSA-0079, Revision 1, describes the capability to provide manual fire fighting capability to standpipes and hose stations by aligning the Emergency Service Water System to a portion of the Fire Protection System such that the Containment, Auxiliary Building and Fuel Handling Building may be able to support two 75 gallon per minute hose stations for local fire fighting.

The discussion in the calculation does not address how a potential fire in the Diesel Generator Building (fire areas 1-D-DGA, 1-D-DGB, 1-D-DTA, and 1-D-DTB) or Emergency Service Water Intake Structure (fire areas 12-I-ESWPA and 12-I-ESWPB) would be addressed after a Safe Shutdown Earthquake. Following an earthquake, it would appear that continued operation of Emergency Diesel Generators and Emergency Service Water Pumps may be important to risk.

Please provide a discussion of the impact of a post-seismic fire in the following fire areas: 1-D-DGA, 1-D-DGB, 1-D-DTA, 1-D-DTB, 12-I-ESWPA, and 12-I-ESWPB. In the discussion, provide either a qualitative or quantitative assessment of the risk impact of a fire in these areas.

HNP RAI 6-1.1

Monitoring Program Performance Criteria

In the response to HNP RAI 6-1 dated August 13, 2009, item number 3 states that acceptable levels of availability, reliability and performance criteria are based on Fire PRA insights and accepted industry guidance such as Electric Power Research Institute (EPRI) Technical Report 1006756, "Fire Protection Equipment Surveillance Optimization and Maintenance Guide." In addition, item number 4 states that "unacceptable levels of availability, reliability and performance will be triggered by the established action levels."

This response corresponds well with the requirement in NFPA 805 Section 2.6.1, "Availability, Reliability, and Performance Levels," which states that "acceptable levels of availability, reliability and performance shall be established." However, the October 9, 2009, revised NFPA 805 LAR states: "The performance criteria used should be availability, reliability or condition monitoring, as appropriate."

There appears to be a change in intent with this wording change. The NRC staff understands that performance with regard to fire protection systems and equipment should relate to measurement of physical attributes that demonstrate the ability to functionally deliver some needed aspect in order to meet the nuclear safety performance criteria. For example, if the required component was a pump, performance would mean the ability to meet certain developed head and flow criteria. Changing the wording to condition monitoring changes the focus to address such things as vibration monitoring and thermographic monitoring for a pump, and thrust and/or torque measurement (MOVATS, VOTES, VIPER, etc.) for a valve. Not all of these activities would necessarily verify the required performance aspects of the component.

Accordingly, please provide an explanation of how condition monitoring fully meets the intent of the requirement in NFPA 805 Section 2.6.1 to include performance in the monitoring program.

Please contact me at 301-415-3178 if you have any questions on this issue, would like to participate in a conference call, or if you require additional time to submit your responses.

Sincerely,

/RA/

Marlayna Vaaler, Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-400

Enclosure:
Request for Additional Information

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