



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

December 28, 2010

Christopher 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 – CORRECTIONS OF
TYPOGRAPHICAL AND FORMATTING ERRORS REGARDING AMENDMENT
NO. 133 AND THE ASSOCIATED SAFETY EVALUATION (TAC NO. MD8807)

Dear Mr. Burton:

On June 28, 2010, the U.S. Nuclear Regulatory Commission (NRC) issued Amendment No. 133 to Renewed Facility Operating License No. NPF-63 for the Shearon Harris Nuclear Power Plant, Unit 1 (HNP) [Agencywide Documents Access and Management System (ADAMS) Accession No. ML101130535], in response to your application dated May 29, 2008, as supplemented by letters dated November 14, 2008, December 11, 2008, August 13, 2009, August 28, 2009, October 9, 2009, February 4, 2010, and April 5, 2010.

The amendment transitioned the existing fire protection program to a risk-informed, performance-based program based on National Fire Protection Association (NFPA) Standard 805 (NFPA 805), "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants," 2001 Edition, in accordance with Title 10 of the *Code of Federal Regulations*, Paragraph 50.48(c).

Members of the NRC and Carolina Power & Light Company (now doing business at Progress Energy Carolinas, Inc.) staff subsequently identified several typographical and formatting errors in the NRC safety evaluation associated with the amendment. Specifically:

Formatting changes to correct font size errors were made on pages 212, 221, 350, 351, 357, 388, 410, 416, 417, 427, 429, 432, 469, 475, 492, and 493 of the safety evaluation.

The word "flowpath" was changed to "flow path" for consistency in the "VFDR Description" field on pages 354, 391, 392, 456, and 494 of the safety evaluation.

Page 46: The sentence "The code of record for the new VEWFDS detection system is NFPA 72, "National Fire Alarm and Signaling Code," 2010 Edition..." should be changed to read "The code of record for the new VEWFDS detection system is NFPA 72, "National Fire Alarm and Signaling Code," 2007 Edition..." This is in accordance with the design basis code of record used by the licensee for the VEWFDS, which was subsequently evaluated by the NRC staff.

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- Page 106: Reference 42 should be changed to read "NFPA 72, "National Fire Alarm and Signaling Code," 2007 Edition, National Fire Protection Association, Quincy, MA"
- Page 201: The V&V Basis Column should be changed to include NUREG-1805 and NUREG-1824, and the final sentence of the NRC Staff Evaluation of Acceptability Column should be changed to read: "Since (1) the V&V basis for the use of NUREG-1805 is NUREG-1824 and the licensee stated that the correlation was applied within the limits of its applicability, and (2) the V&V of the correlations used for flame spread rate along a cable tray in the fire modeling calculations as published by Lee were subjected to a peer review, published in a widely recognized peer-reviewed journal article or in a conference report, and were applied within the limits of their applicability, the NRC staff finds use of this correlation in the HNP application acceptable."
- Page 205: Reference 6 should be changed to read "Lee, B.T., "Heat Release Characteristics of Some Combustible Fuel Sources in Nuclear Power Plants," NBSIR 85-3195, U.S. Department of Commerce, National Bureau of Standards, Gaithersburg, MD, July 1985 (Attachment 3 to ADAMS Accession No. ML013390436)."
- Page 218: RAI 5.15 -- a note should be added to the "Subject" field that reads "(Note that HNP uses a 6.9kV switchgear; however, the guidance above is still applicable)."
- Page 265: Fire Zone [REDACTED] -- the table states that no suppression is installed, yet under the "R" column, it states that suppression is required. The "Yes" under suppression should be changed to a "No" and not in bold font.
- Page 278: Fire Zone [REDACTED] should be changed to [REDACTED].
- Page 306: Third paragraph -- the words "fire fighting" and "can not" should be changed to "firefighting" and "cannot."
- Page 312: Open Item 50 -- in the "VFDR Description" field, the component list should end with "[REDACTED]," not "[REDACTED]."
- Page 317: Fire Zone [REDACTED] should be changed to [REDACTED].
- Page 341: Open Item 10 -- in the "Disposition" field, the word "ortable" should be changed to "portable."
- Page 342: The final sentence should read "...these VFDRs is zero," not "...this VFDR is zero."
- Page 391: Open Item 373 -- in the "Disposition" field, the word "Meggit" should be changed to "Meggitt."

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- Page 392: Open Item 142 -- in the "Disposition" field, the word "Meggit" should be changed to "Meggitt."
- Page 421: The "Evaluation of Fire Suppression Effects..." header should end with "Fire Area [REDACTED]," not "Fire Area [REDACTED]."
- Page 442: Deviation "Evaluation" field -- the word "ERBS" should be changed to "ERFBS."
- Page 456: Deviation "Evaluation" field -- the word "ERBS" should be changed to "ERFBS."
- Page 469: Spacing should be changed to move Recovery Actions statement onto page 469.
- Page 470: Spacing should be changed to move "Recovery Actions Credited for Defense-in-Depth (RA-DID)" header to top of page 470.
- Page 490: The "Evaluation of Fire Suppression Effects..." header should end with "Fire Area [REDACTED]," not "Fire Area [REDACTED]."
- Page 495: Open Item 19 -- in the "Disposition" field, the word "shange" should be changed to "change."

The NRC staff determined that these typographical and formatting errors were inadvertently introduced. The corrections do not change any of the conclusions in the safety evaluation related to the amendment and do not affect the associated *Federal Register* notice to the public.

Corrected safety evaluation pages are enclosed. We regret any inconvenience this may have caused. If you have any questions regarding this issue, please contact me at 301-415-3178.

Sincerely,



Brenda Mozafari, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-400

Enclosure:
Corrections to NRC Safety Evaluation
for Amendment No.133 to NPF-63

cc w/ enclosure: Distribution via Listserv

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ENCLOSURE

CORRECTED PAGES OF THE

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 133 TO

RENEWED FACILITY OPERATING LICENSE NO. NPF-63

CAROLINA POWER & LIGHT COMPANY

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1

DOCKET NO. 50-400

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cabinets at HNP during the incipient stage of a fire. The following discussion is based on the information provided by the licensee in LAR Section 4.8.2.4, "Incipient Fire Detection System."

The licensee selected the specific plant electrical cabinets to be monitored by the VEWFDS based on risk insights gained while developing the HNP Fire PRA. The VEWFDS are being provided as an enhancement to the existing plant fire protection program and are intended to either assist in preventing multiple spurious actuations that could result from fire damage within the cabinets, or prevent a fire within the cabinet from progressing to the point at which it could ignite overhead cables, resulting in the development of a hot gas layer (HGL) in the room. The VEWFDS accomplishes the first goal by detecting a fire before it has the opportunity to progress beyond the smoldering incipient stage, thereby preventing damage to more than the initial degrading component or subcomponent.

The code of record for the new VEWFDS detection system is NFPA 72, "National Fire Alarm and Signaling Code," 2007 Edition (Reference 42). NFPA 76, "Standard for the Fire Protection of Telecommunications Facilities" (Reference 43), is also being used as a part of the design basis with respect to transport time in order to ensure that the VEWFDS meets the performance goals for proper credit in the Fire PRA. Specifically, the maximum transport time of 60 seconds for the VEWFDS from NFPA 76 is being used as a design basis rather than the less conservative 120 second time requirement from NFPA 72 for air sampling detection systems.

The VEWFDS is an air sampling type fire detection system that utilizes "cloud chamber" detection technology to continually sample air from different zones. The detector is designed to identify submicrometer, precombustion particles at the earliest state of a fire (incipient stage) before the visible or smoldering smoke stage. According to statements made by the VEWFDS manufacturer for HNP, the cloud chamber design provides high sensitivity, while simultaneously maintaining a high level of discrimination with respect to false alarms. The VEWFDS is intended to detect the incipient stage of a fire and provide an alarm to operations personnel at the very earliest warning levels, before any resulting damage to the surrounding components.

Each individual detection zone layout connected to the VEWFDS (four zones maximum at HNP) will be designed specifically for that zone configuration, with each air sampling piping/tubing layout designed based on the requirements and limitations from the vendor's hydraulic calculations for air flow requirements. This will assure balanced air flow and adequate air transport times in accordance with the design requirements.

During initial setup, the licensee will determine the system alert and alarm settings for each detection zone as part of the installation and pre-operational testing of the VEWFDS. Guidance from NFPA 72 and the VEWFDS equipment manufacturer will be used to establish the alert and alarm thresholds during final commissioning of the system. Once established, the licensee will maintain the alert and alarm settings under the existing plant configuration control process (i.e., the engineering change process), which nominally includes all program change controls in addition to the engineering calculation justification process.

The licensee stated that the VEWFDS detectors will all be connected to a new fire alarm control panel (FACP) located in the auxiliary relay room adjacent to the main control room (MCR). The new FACP will be connected to the MCR annunciators such that indications of problems with the detection system, very early warning alerts, and actual fire condition alarms will be identified and available to the operators in the control room. Control room operators will respond to the

34. Generic Letter 1986-10, "Implementation of Fire Protection Requirements," dated April 24, 1986, Supplement 1, "Fire Endurance Test Acceptance Criteria for Fire Barrier Systems Used to Separate Safe Shutdown Trains Within the Same Fire Area," dated March 25, 1994, U.S. Nuclear Regulatory Commission, Washington, DC
35. NEI 00-01, "Guidance for Post-Fire Safe Shutdown Circuit Analysis," Revision 2, Nuclear Energy Institute, Washington, DC, December 2007 [ADAMS Accession No. ML091770265]
36. NEI 00-01, "Guidance for Post-Fire Safe Shutdown Circuit Analysis," Revision 1, Nuclear Energy Institute, Washington, DC, January 2005 [ADAMS Accession No. ML050310295]
37. Letter from Marlayna Vaaler, U.S. Nuclear Regulatory Commission, to Christopher L. Burton, Progress Energy, dated August 6, 2009, "Shearon Harris Nuclear Power Plant, Unit 1 - Request for Additional Information Regarding 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)" [ADAMS Accession No. ML092170715]
38. Letter from Marlayna Vaaler, U.S. Nuclear Regulatory Commission, to Christopher L. Burton, Progress Energy, dated January 14, 2010, "Shearon Harris Nuclear Power Plant, Unit 1 - Second Request for Additional Information Regarding 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)" [ADAMS Accession No. ML100130254]
39. Draft NEI 04-06, "Guidance for Self-Assessment of Circuit Failure Issues," Revision L, Nuclear Energy Institute, Washington, DC, March 2005 [ADAMS Accession No. ML050760219]
40. Regulatory Issue Summary 2004-03, "Risk-Informed Approach for Post-Fire Safe-Shutdown Circuit Inspections," Revision 1, U. S. Nuclear Regulatory Commission, Washington, DC, dated December 29, 2004 [ADAMS Accession No. ML042440791]
41. NUREG-1852, "Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire," U. S. Nuclear Regulatory Commission, Washington, DC, October 2007 [ADAMS Accession No. ML073020676]
42. NFPA 72, "National Fire Alarm and Signaling Code," 2007 Edition, National Fire Protection Association, Quincy, MA
43. NFPA 76, "Standard for the Fire Protection of Telecommunications Facilities," 2009 Edition, National Fire Protection Association, Quincy, MA
44. NUREG/CR-6850, "EPRI/NRC-RES, Fire PRA Methodology for Nuclear Power Facilities," Volumes 1 and 2, U. S. Nuclear Regulatory Commission, Washington, DC, September 2005 [ADAMS Accession Nos. ML052580075 (volume 1) and ML052580118 (volume 2)]

Attachment C4: Table 3.4-4, V&V Basis for Fire Model Calculations of Other Models Used at HNP

Calculation	Application at HNP	V&V Basis	NRC Staff Evaluation of Acceptability
<p>Flame Spread Rate Along a Cable Tray</p> <p>(HNP-M/MECH-1195)</p>	<p>-----</p>	<p>NUREG-1805</p> <p>NUREG-1824</p> <p>Lee, 1985</p>	<p>The method used for calculating flame spread rate is a departure from NUREG/CR-6850, where a methodology is employed that is dependent on the thermo-physical properties of specific heat, thermal conductivity, density, and "ignition temperature," as well as the phenomenological values of incident heat flux from the flame to the fuel (cable) surface and the "heated fuel distance" (which is selected by engineering judgment).</p> <p>Because the thermo-physical properties for Kerite fire-rated cables are not available in published sources, nor is alternate research available, an empirically-based method with the single variable of heat release rate was selected to calculate the flame spread rate.</p> <p>NUREG-1805 and IMC 0609 data was used, in conjunction with horizontal flame spread correlations as documented in Lee, 1985, to correlate bench-scale data to moderate-scale tests in terms of an area spread rate for a single cable tray array.</p> <p>Since (1) the V&V basis for the use of NUREG-1805 is NUREG-1824 and the licensee stated that the correlation was applied within the limits of its applicability, and (2) the V&V of the correlations used for flame spread rate along a cable tray in the fire modeling calculations as published by Lee were subjected to a peer review, published in a widely recognized peer-reviewed journal article or in a conference report, and were applied within the limits of their applicability, the NRC staff finds use of this correlation in the HNP application acceptable.</p>

References for Table 3.4-4

1. NUREG-1805, "Fire Dynamics Tools (FDT^s) Quantitative Fire Hazard Analysis Methods for the U. S. Nuclear Regulatory Commission Fire Protection Inspection Program," U.S. Nuclear Regulatory Commission, Washington, DC, December 2004.
2. NUREG-1824, "Verification & Validation of Selected Fire Models for Nuclear Power Plant Applications," U.S. Nuclear Regulatory Commission, Washington, DC, May 2007.
3. NUREG/CR-6850, "EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities," U.S. Nuclear Regulatory Commission, Washington, DC, September 2005.
4. Peacock, R.D., Jones, W.W., Reneke, P.A., and Forney, G.P., "CFAST – Consolidated Model of Fire Growth and Smoke Transport (Version 6) User's Guide," NIST Special Publication 1041, National Institute of Standards and Technology, Gaithersburg, MD, December 2005.
5. Yokoi, S., "Study on the Prevention of Fire Spread Caused by Hot Upward Current," Report Number 34, Building Research Institute, Tokyo, Japan, 1960.
6. Lee, B.T., "Heat Release Characteristics of Some Combustible Fuel Sources in Nuclear Power Plants," NBSIR 85-3195, U.S. Department of Commerce, National Bureau of Standards, Gaithersburg, MD, July 1985 (Attachment 3 to ADAMS Accession No. ML013390436).

Attachment C5: Table 3.4-5, Resolution of Fire Risk Assessment Requests for Additional Information

RAI	Subject	NRC Staff Evaluation of RAI Response and Basis for Acceptability	Subject Area
15.0	<p>LAR Attachment X, Page X-45:</p> <p>The response to F&O FSS-A2-2 states that "F&O FSS-A2-2 suggests that the screening approach (referring to the approach for determining time for reaching a damaging hot gas layer temperature) is incorrect and may be very conservative. It is concluded after a review of the calculations for determining time for hot gas layer reaching damaging temperatures that the approach is correct."</p> <p>Provide the basis for this conclusion of correctness and non-over-conservatism.</p>	<p>The focused scope peer review verified the source of the methodology for determining the time necessary to reach a damaging hot gas layer temperature, as well as the basis for the conclusion of correctness and non-over-conservatism in the screening approach.</p> <p>This resolves the NRC staff's concern.</p>	<p>NUREG/CR-6850 Deviations</p>
16.0	<p>LAR Attachment X, Page X-46:</p> <p>From the response to F&O FSS-B1-1, it appears that a pre-existing HNP assumption that no spurious actuations occur within 10 minutes of a fire may have implicitly been retained in the MCR abandonment study, and that this assumption was not carried into the Fire PRA.</p> <p>If this assumption was implicitly retained in the MCR abandonment study, discuss how the MCR abandonment analysis for the Fire PRA compensates for this.</p> <p>It also appears that the analysis for MCR abandonment addresses only degradation/loss of functions due to fire effects within the MCR.</p> <p>Discuss how degradation/loss of functions in the MCR due to fire outside the MCR (even if there are no resulting environmental fire effects within the MCR) has been addressed. Has abandonment of the MCR under these conditions been considered?</p> <p>In addition, if enough spurious actuations occurred within the first 10 minutes to cause degradation/loss of functions within the MCR, would non-procedural MCR abandonment be considered?</p>	<p>The licensee stated that MCR abandonment would be expected before all functions would be lost, and that abandonment is time critical since if it occurs too early there could be adverse risk implications and if it occurs too late, functions could be lost and not recovered.</p> <p>The licensee indicated that no credit is taken for abandoning the MCR except due to environmental conditions inside the MCR. For the loss of environmental conditions, a 0.1 probability is assumed.</p> <p>Accordingly, the HNP Fire PRA model should be conservative in that no alternate means of monitoring, activation, etc., of potentially available components would be credited upon loss of the MCR function in scenarios for which the Fire PRA does not take credit for MCR abandonment.</p> <p>Effectively, this implies a maximum penalty (conservatism) given the conditions that would render the MCR "useless."</p> <p>This resolves the NRC staff's concern.</p>	<p>Main Control Room</p>

Attachment C5: Table 3.4-5, Resolution of Fire Risk Assessment Requests for Additional Information

RAI	Subject	NRC Staff Evaluation of RAI Response and Basis for Acceptability	Subject Area
5.15	<p>HNP-F/PSA-0079: Section 5.4.2.1 states that "after the HEAF, a source fire of 69 kilowatts (kW) is assumed to propagate to secondary combustibles."</p> <p>Section M.6.1 of NUREG/CR-6850 states that for the ensuing fire after the energetic phase, a generic frequency for HEAFs should be assigned and apportioned using the location and ignition source weighting factors.</p> <p>Section G.7 gives the following guidance for HEAF sources:</p> <p>(1) 4160V Switchgear: The fire in the switchgear will remain confined to a single bundle and the distribution with 65 kW and 200 kW as the 75th and 98th percentiles can be assumed if the cables are qualified;</p> <p>(2) 480V MCC: MCCs of this type with qualified cable are considered to satisfy the criteria established for a 65 kW HRR as the 75th percentile. In contrast, if the cabinet has unqualified cable, and assuming a closed door, a value of 220 kW would be assigned as the 75th percentile.</p> <p>(Note that HNP uses a 6.9kV switchgear; however, the guidance above is still applicable)</p> <p>Please provide the basis for the apparent a priori limiting of the propagation of a source fire from an HEAF to the 69 kW HRR (i.e., versus 200 kW).</p>	<p>The licensee has provided a reasonable justification for limiting the HRR from the secondary fire after the HEAF to the 75 percentile value of 69 kW assuming qualified cable.</p> <p>This resolves the NRC staff's concern.</p>	Fire Modeling

Attachment C5: Table 3.4-5, Resolution of Fire Risk Assessment Requests for Additional Information

RAI	Subject	NRC Staff Evaluation of RAI Response and Basis for Acceptability	Subject Area
5.20	<p>HNP-F/PSA-0079: Attachment 4 includes Table 3, "Main Control Board (MCB) Fire Consequence Characterization – Successful Fire Suppression." The following minimum groupings appear to generate a CCDP equal to 1.0 (or close enough that the risk significance merits further analysis): (1) [REDACTED]; (2) [REDACTED]; and (3) [REDACTED].</p> <p>However, there are other "non-minimal" groupings contained in Table 3 (i.e., [REDACTED] and [REDACTED]), each of which includes at least one cabinet that is also associated with the higher risk significance groupings.</p> <p>Given the discussion above, please specify which main control room groupings of MCBs actually result from the analyses associated with Table 3.</p>	<p>The licensee explained that there is consistency between the citing of CCDPs equal to 1.0 in Table 3 and Table 10 of Attachment 4 to HNP-F/PSA-0079.</p> <p>This resolves the NRC staff's concern.</p>	Main Control Room
5.21	<p>HNP-F/PSA-0079: Section 4 of Attachment 4 states, in part, that combining the frequency terms for transient combustibles yields: $5.7E-4 \times 1.0E-2 \times 2.63E-2 = 1.50E-7$ per year.</p> <p>It appears that an MCR transient ignition frequency of $5.7E-4$ per year is assumed. However, this value is actually the conditional probability of damage given a fire event, per Figure L-1 of NUREG/CR-6850.</p> <p>Bin 7 of Table 6-1 in NUREG/CR-6850 gives the transient ignition frequency in the control/auxiliary/reactor building as $3.9E-3$ per year.</p> <p>Accordingly, please revise these calculations, if appropriate, using the correct NUREG/CR-6850 value, or provide the basis for the value currently assumed for transient ignition frequency.</p>	<p>The licensee indicated the reference calculation for the updated MCR transient ignition frequency as a justification, showing that it is bounded by the transient ignition frequency value previously used.</p> <p>While the NRC staff concern is resolved, the staff expects that the licensee will rectify the anomaly post-transition such that the Fire PRA will employ the correct value for the MCR transient ignition frequency.</p>	Main Control Room

Fire Area	Fire Zone	Zone Description	Automatic Suppression Provided?	Suppression Required System?						Detection Provided?	Detection Required System?					
				S	D	E	EC	R	C		S	D	E	EC	R	C
[REDACTED]	[REDACTED]	[REDACTED]	No	No	No	No	-	No	No	Yes (T)	No	No	Yes	ESR 99-00395	No	No
[REDACTED]	[REDACTED]	[REDACTED]	No	No	No	No	-	No	No	Yes	No	No	No	-	No	No
[REDACTED]	[REDACTED]	[REDACTED]	Yes	No	No	No	-	Yes	No	Yes (T)	No	No	No	-	Yes	No
[REDACTED]	[REDACTED]	[REDACTED]	No	No	No	No	-	No	No	Yes	No	No	No	-	No	No
[REDACTED]	[REDACTED]	[REDACTED]	No	No	No	No	-	No	No	Yes	No	No	No	-	No	No
[REDACTED]	[REDACTED]	[REDACTED]	No	No	No	No	-	No	No	Yes	No	No	No	-	No	No

Legend:

S	Abbreviation for Separation	Systems required for NFPA 805 Chapter 4 separation criteria
D	Abbreviation for Deviation	Systems required for NRC approved exemptions and deviations
E	Abbreviation for EEEEs	Systems required for the acceptability of existing compliance strategies using EEEEs (Left column documents if required, right column documents the engineering change (EC))
R	Abbreviation for Risk	Systems determined to be of 'higher significance' by the NFPA 805 Expert Panel
C	Abbreviation for Change Evaluation	Systems required to maintain an adequate balance of defense-in-depth for change evaluations
T	Abbreviation for Thermal Detection	

While performing a review of Fire Areas [REDACTED], the NRC staff identified an issue that required the licensee to provide additional information in order to adequately demonstrate compliance with specific portions of the applicable NFPA 805 requirements.

Fire Area	Fire Zone	Zone Description	Automatic Suppression Provided?	Suppression Required System?					Detection Provided?	Detection Required System?				
				S	D	E	R	C		S	D	E	R	C
[REDACTED]	[REDACTED]	[REDACTED]	No	No	No	No	No	No	No	No	No	No	No	No
[REDACTED]	[REDACTED]	[REDACTED]	No	No	No	No	No	No	No	No	No	No	No	No
[REDACTED]	[REDACTED]	[REDACTED]	No	No	No	No	No	No	No	No	No	No	No	No
[REDACTED]	[REDACTED]	[REDACTED]	No	No	No	No	No	No	No	No	No	No	No	No
[REDACTED]	[REDACTED]	[REDACTED]	No	No	No	No	No	No	No	No	No	No	No	No
[REDACTED]	[REDACTED]	[REDACTED]	No	No	No	No	No	No	No	No	No	No	No	No
[REDACTED]	[REDACTED]	[REDACTED]	No	No	No	No	No	No	No	No	No	No	No	No
[REDACTED]	[REDACTED]	[REDACTED]	No	No	No	No	No	No	No	No	No	No	No	No
[REDACTED]	[REDACTED]	[REDACTED]	No	No	No	No	No	No	No	No	No	No	No	No
[REDACTED]	[REDACTED]	[REDACTED]	No	No	No	No	No	No	No	No	No	No	No	No

While performing a review of Fire Area [REDACTED], the NRC staff identified several issues that required the licensee to provide additional information in order to adequately demonstrate compliance with specific portions of the applicable NFPA 805 requirements. By letter dated August 6, 2009, the staff requested additional information regarding a number of regulatory and technical issues pertaining to adequately demonstrating that performance-based compliance has been met in accordance with NFPA 805 Section 4.2.4 (in particular, RAI 3-26 and RAI 3-27 of the associated letter address these concerns).

That staff requested that the licensee explain why detection was required for defense-in-depth in this fire area, while suppression was not. In its supplemental letter dated August 28, 2009, the licensee responded by stating that the original safe shutdown strategy for this fire area was to provide 3 hour protection in the form of MTTM fire wrap material for one train of safe shutdown equipment in the area. Fire detection is also required in the fire area for defense-in-depth. However, as outlined above, the VFDR for this fire area is that the MTTM ERFBS is rated for 115 minutes (1 hour, 55 minutes) rather than the required 3 hours. Consequently, the degraded MTTM fire wrap has been evaluated by the licensee with respect to risk and found to be acceptable. This acceptance is based on the small impact to the non-suppression probability (between 115 and 180 minutes).

The NRC staff finds this acceptable based on the information provided in the LAR and associated RAI response, which states that detection is required for defense-in-depth in order to ensure that manual firefighting efforts are initiated and control of the fire is achieved within the 1 hour, 55 minute rating of the MTTM fire wrap. Without detection in the room, this cannot be assured. Thus, the staff accepts that defense-in-depth is maintained without a suppression system based on the presence of the MTTM fire barrier, and the available detection in the room providing early warning such that fire suppression and control can be achieved manually.

The staff also asked the licensee to discuss the disposition of potential spurious operation of the seal injection filter backwash valves by de-energizing several breakers. The staff requested the licensee describe the administrative controls to be used when the valves needed to be operated while the plant was at power, resulting in the valves being susceptible to spurious operations.

In its supplemental letter dated August 28, 2009, the licensee responded by stating that the modification to change the circuit breaker positions to open had been completed. The only time the seal injection filter backwash valves will be energized and susceptible to fire-induced spurious operation is during filter backwash operations. This is a short duration evolution and the normal configuration will be restored immediately following the evolution.

The NRC staff finds this acceptable based on the information provided in the LAR and associated RAI response, which states that the licensee will use administrative controls to ensure that the seal injection backwash valves will be maintained closed with power removed except for the short duration time when filter backwash operations are required, and also states that procedures have been changed to require restoration of the required state of the valves (closed with power removed) immediately upon completion.

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
350	<p>The hot standby manual actions credited for [REDACTED], [REDACTED], [REDACTED], [REDACTED], [REDACTED], and [REDACTED] are required to maintain RCS make up.</p> <p>Because this is an alternate shutdown area, these actions are allowable under the current licensing basis and a change evaluation is not required.</p> <p>However, due to time constraints, the actions are not feasible.</p>	[REDACTED]	Planned modification to install an alternate seal injection system.	Based on the proposed modification to install an alternate seal injection system, the NRC staff finds this VFDR acceptable.

The fire risk evaluation for this fire area determined that the additional risk incorporated because of these VFDRs is zero.

Recovery Actions (RAs)

Component ID	Component Name	Licensee's Description of Action
[REDACTED]	SG [REDACTED] Blowdown Flow Control Valve	De-energize [REDACTED] at [REDACTED], in Fire Zone [REDACTED] in order to fail the valve closed.

Fire Area	Fire Zone	Zone Description	Automatic Suppression Provided?	Suppression Required System?					Detection Provided?	Detection Required System?				
				S	D	E	R	C		S	D	E	R	C
[REDACTED]	[REDACTED]	[REDACTED]	No	No	No	No	No	No	Yes ¹ (I, AS)	No	Yes (I)	No	Yes (I, AS)	Yes (I, AS)
[REDACTED]	[REDACTED]	[REDACTED]	Yes ²	No	Yes	No	No	No	Yes (I, AS)	No	Yes (I)	No	Yes (I, AS)	Yes (I, AS)

Legend:

S	Abbreviation for Separation	Systems required for NFPA 805 Chapter 4 separation criteria
D	Abbreviation for Deviation	Systems required for NRC approved exemptions and deviations
E	Abbreviation for EEEEs	Systems required for the acceptability of existing compliance strategies using EEEEs
R	Abbreviation for Risk	Systems determined to be of 'higher significance' by the NFPA 805 Expert Panel
C	Abbreviation for Change Evaluation	Systems required to maintain an adequate balance of defense-in-depth for change evaluations
I	Abbreviation for Ionization Detection	
AS	Abbreviation for Air Sampling Detection	

While performing a review of Fire Area [REDACTED], the NRC staff identified several issues that required the licensee to provide additional information in order to adequately demonstrate compliance with specific portions of the applicable NFPA 805 requirements. By letters dated August 6, 2009, and January 14, 2010, the staff requested additional information regarding a number of regulatory and technical issues pertaining to adequately demonstrating that performance-based compliance has been met in accordance with NFPA 805 Section 4.2.4 (in particular, RAI 3-20, RAI 3-23n, RAI 3-28, RAI 3-30, RAI 3-31, RAI 3-62, and RAI 3-72 of the associated letter address these concerns).

RAI 3-20 requested that the licensee clarify how the RCS inventory control, boration, and RCP seal integrity functions are being achieved for each fire area, how the availability of at least one charging pump is being assured given the potential for pump damage due to fire, and for which fire areas the new plant equipment is being credited. In its supplemental letter dated August 28, 2009, the licensee responded by stating that on a fire area basis, the means of ensuring that RCS inventory control, reactivity control (boration), and the RCP seal integrity functions are being achieved is detailed in the plant safe shutdown calculation.

¹ A VEWFDs is being installed to monitor risk significant control panels in order to increase defense-in-depth.
² An automatic suppression system has been provided in the [REDACTED] per the approved deviation.

Variations from the Deterministic Requirements (VFDRs)

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
10	A required access path to Fire Area [REDACTED] is not adequately lighted.	-----	<p>Engineering change request (ECR) 1876 was generated since no EC addresses this specific issue. In general, portable lighting will be used to perform actions where fixed lighting is not provided.</p> <p>However, the manual actions in Fire Area [REDACTED] will no longer be required pending completion of EC 68645, which will allow [REDACTED] to be credited instead of [REDACTED] (and its associated manual actions).</p> <p>In addition, EC 67742 is complete, which renders the manual action to de-energize the smoke purge fan as no longer necessary.</p>	Based on the proposed modification associated with EC 68645, which renders the manual action requiring the emergency lighting as no longer necessary, the NRC staff finds this VFDR acceptable.
128	<p>The manual action credited to de-energize and open [REDACTED] is required to establish the credited path of auxiliary feedwater.</p> <p>Under the current licensing basis, this action is considered unallowable and a change evaluation is required.</p>	<p>[REDACTED]</p> <p>[REDACTED]</p>	EC 68645 is removing the cables for [REDACTED] from the fire area, such that a flow path of water to the [REDACTED] SG is assured. All other conditions for using the [REDACTED] SG for decay heat removal are met for this area. Therefore, [REDACTED] will no longer be required to maintain hot standby.	Based on the proposed modification associated with EC 68645, which results in [REDACTED] remaining free of fire damage given a fire in this area, the NRC staff finds this VFDR acceptable.

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
131	<p>Exception [REDACTED] is applied to [REDACTED] in this fire area.</p> <p>The concern is that emergency lighting for the [REDACTED] room might be lost.</p>	<p>[REDACTED]</p> <p>[REDACTED]</p>	<p>EC 58779 evaluated the availability of diesel backed lighting for the [REDACTED] room. One conduit ([REDACTED]) was found to be not protected.</p> <p>A change evaluation for this conduit was performed which showed that this conduit is not in the ZOI of a significant ignition source based on the addition of incipient detection in the ACP per EC 69501.</p>	<p>Based on the performance-based evaluation (change evaluation) performed, which documents that Conduit [REDACTED] will not be within the zone of influence of a significant ignition source once the VEWFDs is installed in the ACP, the NRC staff finds this VFDR acceptable.</p> <p>Revision of HNP-M/MECH-1124 to incorporate the revised change evaluation is an implementation item (SE Section 2.9; Item 16).</p>
374	<p>This fire area credits hot standby actions to manually de-energize pressurizer heaters that have the potential to operate spuriously due to cable damage.</p>	<p>[REDACTED]</p>	<p>HNP-M/MECH-1124 will be revised to document a change evaluation which shows that the affected cable is not in the ZOI of a significant ignition source based on the addition of incipient detection in the ACP per EC 69501.</p>	<p>Based on the performance-based evaluation (change evaluation) performed, which documents that Cable [REDACTED] will not be within the zone of influence of a significant ignition source once the VEWFDs is installed in the ACP, the NRC staff finds this VFDR acceptable.</p> <p>Revision of HNP-M/MECH-1124 to incorporate the revised change evaluation is an implementation item (SE Section 2.9; Item 16).</p>

The fire risk evaluation for this fire area determined that the additional risk incorporated because of these VFDRs is zero.

Variations from the Deterministic Requirements (VFDRs)

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
30	<p>The MT™ ERFBS is credited as a 3-hour fire barrier in this area, but is not a fully rated 3-hour fire barrier.</p> <p>The change evaluation process is determining whether the installed fire barrier provides an adequate level of protection for the hazards in the fire area.</p>	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	<p>These cables are not within the ZOI of a fixed ignition source. Accordingly, the associated MT™ barrier is acceptable because it is not subject to fire damage.</p> <p>The MT™ ERFBS is credited for 115 minutes (1 hour and 55 minutes), in lieu of the 3 hours necessitated by the deterministic requirements.</p> <p>The risk evaluation for plant changes in this area was assessed quantitatively for acceptability using the delta-CDF and delta-LERF criteria from NEI 04-02, Section 5.3.5, and RG 1.205.</p> <p>The associated change in risk is below the RG 1.205 acceptance criteria. As such, the change in risk due to the MT™ ERFBS reduced rating has a negligible contribution to the change in CDF results.</p> <p>This is due to the difference in the probability of non suppression between 115 min. and 3 hours being low.</p>	<p>Based on (1) the MT™ ERFBS fire barrier not being within the zone of influence of a fixed ignition source, (2) the barrier fire duration being based on appropriate testing, (3) the proposed modifications to bring the fire barrier up to the tested configuration, and (4) the calculated change in risk meeting the associated acceptance requirements, the NRC staff finds this VFDR acceptable.</p>

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
<p>(continued)</p> <p>30</p>	<p>- CONTINUED -</p> <p>A MT™ ERFBS is credited as a 3-hour fire barrier in this area, but is not a fully rated 3-hour fire barrier.</p> <p>The change evaluation process is evaluating whether the current fire barrier provides an adequate level of protection for the hazards in the fire area.</p>	<p>(continued)</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	<p>The delta-CDF and delta-LERF results are lower than the threshold which requires NRC notification per the standard fire protection license condition included in RG 1.205.</p> <p>The change process targets associated with the MT™ ERFBS are not within the zone of influence of significant ignition sources and so are considered to be free of fire damage, and therefore considered acceptable "as-is."</p> <p>EC 69765 will modify the MT™ ERFBS consistent with the tested configuration for the fire resistance assumed.</p>	<p>- CONTINUED -</p> <p>Based on (1) the MT™ ERFBS fire barrier not being within the zone of influence of a fixed ignition source, (2) the barrier fire duration being based on appropriate testing, (3) the proposed modifications to bring the fire barrier up to the tested configuration, and (4) the calculated change in risk meeting the associated acceptance requirements, the NRC staff finds this VFDR acceptable.</p>
<p>203</p>	<p>Exceptions [REDACTED], [REDACTED], and [REDACTED] identify cable separation issues between [REDACTED] pumps in Fire Area [REDACTED].</p> <p>The existing deviation does not take into account that there is less than 20 feet of separation between the mechanical end of [REDACTED] pump [REDACTED] and the closest cables from the [REDACTED] pump.</p>	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	<p>These cables (and associated instrument lines) are not within the zone of influence of a significant ignition source.</p> <p>No ignition source can damage both the cables for the [REDACTED] pump components and those for the [REDACTED] pump components.</p>	<p>Based on the target relationship to the zone of influence of the ignition source(s), the NRC staff finds this VFDR acceptable.</p>

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
115	<p>This fire area contains cables for both [REDACTED] and [REDACTED], the RWST supply valves to the CSIP.</p> <p>The hot standby manual action credited for [REDACTED] is required to establish a flow path from the RWST to the common charging pump suction header. This flow path is required for operation of the credited source of borated water to the RCS.</p> <p>Under the current licensing basis, this action is considered unallowable and a change evaluation is required.</p>	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	<p>Cables [REDACTED] and [REDACTED] are not within the zone of influence of an ignition source.</p> <p>Because the cables are not subject to fire damage, Valve [REDACTED] will be available when required.</p> <p>Cables [REDACTED] and [REDACTED] are not within the zone of influence of a significant ignition source.</p> <p>Accordingly, Valve [REDACTED] remains available if power is lost to [REDACTED].</p>	<p>Based on the target relationship to the zone of influence of the ignition source(s), the NRC staff finds this VFDR acceptable.</p>
116	<p>Multiple spurious actuations could result in cross-connecting the chilled water headers, placing the system at risk.</p> <p>This fire area credits a hot standby action to split the two chilled water headers (Exception [REDACTED]).</p> <p>This action is considered unallowable (pending additional research) and will require a change evaluation.</p>	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	<p>This scenario requires multiple spurious actuations of the listed valve pairs (e.g., [REDACTED] and [REDACTED]).</p> <p>These cables are not within the zone of influence of a significant ignition source.</p>	<p>Based on the target relationship to the zone of influence of the ignition source(s), the NRC staff finds this VFDR acceptable.</p>

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
370	<p>The potential exists for loss of RCP seal integrity in this fire area due to the simultaneous loss of seal injection and seal cooling (Exception [REDACTED]).</p> <p>This issue is being addressed in the change evaluation for this fire area.</p>	[REDACTED]	<p>EC 70350 will provide an additional source of RCS makeup/seal injection in the event water flow to the seals is interrupted.</p>	<p>Based on the proposed modification to install an alternate seal injection system, the NRC staff finds this VFDR acceptable.</p>
150	<p>Exception [REDACTED] is applied to [REDACTED] and addresses the potential that a fire in Fire Area [REDACTED] can disable [REDACTED] and cause a loss of the credited emergency service water train.</p> <p>A buffer area review determined that separation is less than 20 feet from the redundant train equipment.</p> <p>This issue is being addressed in the change evaluation for this fire area.</p>	[REDACTED]	<p>Further analysis shows that the [REDACTED] train emergency service water and [REDACTED] is available. The cables for [REDACTED] are wrapped with HEMYC™ ERFBS in conduits [REDACTED] and [REDACTED].</p> <p>These conduits are not within the zone of influence of a significant ignition source, and the HEMYC™ ERFBS is acceptable.</p>	<p>Based on (1) the installed HEMYC™ ERFBS, (2) the proposed modifications to bring the fire barriers up to the tested configuration, and (3) the target relationship to the zone of influence of the ignition source(s), the NRC staff finds this VFDR acceptable.</p>
348	<p>The potential exists for loss of RCP seal integrity in this fire area due to the simultaneous loss of seal injection and seal cooling (Exception [REDACTED]).</p> <p>This issue is being addressed in the change evaluation for this fire area.</p>	[REDACTED]	<p>EC 70350 will provide an additional source of RCS makeup/seal injection in the event water flow to the seals is interrupted.</p>	<p>Based on the proposed modification to install an alternate seal injection system, the NRC staff finds this VFDR acceptable.</p>

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
317	<p>The HEMYC™ ERFBS credited in this area is not a fully rated 1-hour fire barrier.</p> <p>The change evaluation process is determining whether the installed fire barriers provide an adequate level of protection for the hazards in the fire area.</p>	[REDACTED]	<p>The change evaluation demonstrated that the HEMYC™ ERFBS as tested provide adequate protection, as detailed below.</p> <p>The HEMYC™ ERFBS is credited for 25 minutes, in lieu of the 1 hour necessitated by the deterministic requirements.</p> <p>The risk evaluation for plant changes in this area was assessed quantitatively for acceptability using the delta-CDF and delta-LERF criteria from NEI 04-02, Section 5.3.5, and RG 1.205.</p> <p>The associated change in risk is below the RG 1.205 acceptance criteria. As such, the change in risk due to the HEMYC™ ERFBS reduced rating has a negligible contribution to the change in CDF results.</p> <p>This is due to the difference in the probability of non suppression between 25 minutes and 60 minutes being low.</p>	<p>Based on (1) the barrier fire duration being based on appropriate testing, (2) the proposed modifications to bring the fire barrier up to the tested configuration, and (3) the calculated change in risk meeting the associated acceptance requirements, the NRC staff finds this VFDR acceptable.</p>

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
373	<p>The hot standby manual action credited for [REDACTED] is required to establish a flow path for charging pump minimum-flow.</p> <p>This flow path is required for the credited train [REDACTED] charging pump.</p> <p>Under the current licensing basis, this action is considered unallowable and a change evaluation is required.</p>	[REDACTED]	<p>The change evaluation showed that the affected cable is not within the zone of influence of a significant ignition source.</p> <p>EC 71147 is installing Meggitt cable down past the top row of breakers in order to limit the potential for spurious actuation of the valve's breaker and associated MCC stack.</p> <p>Fire modeling demonstrated that any non-fire rated cable in the top cable run and in the first row of the MCC could be damaged. This is documented in a site-specific calculation. Thus, this component is susceptible to spurious actuation only from a fire in its breaker cubicle or the column below the breaker.</p> <p>To reduce the probability that a transient could impact the cable, a transient combustible exclusion zone was created.</p> <p>In addition, a calculation documents that a chiller lube oil fire in Fire Area [REDACTED] will not result in an HGL.</p> <p>EC 70350 will provide seal injection and RCS makeup if the running CSIP is damaged.</p>	<p>Based on (1) the installed Meggitt cable, (2) the analysis performed by the licensee which demonstrates that only fires in the breaker cubicle or the column below the breaker can cause spurious actuation of [REDACTED], (3) the creation of a transient combustible exclusion zone, (4) a calculation demonstrating that a chiller lube oil fire will not create a hot gas layer, and (5) the commitment to install the alternate seal injection system, the NRC staff finds this VFDR acceptable.</p>

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
142	<p>The hot standby manual action credited for [REDACTED] is required to establish a flow path for charging pump minimum-flow.</p> <p>This flow path is required for the credited train [REDACTED] charging pump.</p> <p>Under the current licensing basis, this action is considered unallowable and a change evaluation is required.</p>	[REDACTED]	<p>The change evaluation showed that the affected cable is not within the zone of influence of a fixed ignition source.</p> <p>The change evaluation will be updated to show that the cable is not within the zone of influence of a significant ignition source.</p> <p>EC 71147 is installing Meggitt cable down past the top row of breakers in order to limit the potential for spurious actuation of the valve's breaker and associated MCC stack.</p> <p>Fire modeling demonstrated that any non-fire rated cable in the top cable run and in the first row of the MCC could be damaged. This is documented in a site-specific calculation. Thus, this component is susceptible to spurious actuation only from a fire in its breaker cubicle or the column below the breaker.</p> <p>To reduce the probability that a transient could impact the cable, a transient combustible exclusion zone was created.</p> <p>In addition, a calculation documents that a chiller lube oil fire in Fire Area [REDACTED] will not result in an HGL.</p> <p>EC 70350 will provide seal injection and RCS makeup if the running CSIP is damaged.</p>	<p>Based on (1) the installed Meggitt cable, (2) the analysis performed by the licensee which demonstrates that only fires in the breaker cubicle or the column below the breaker can cause spurious actuation of [REDACTED], and (3) the commitment to install the alternate seal injection system, the NRC staff finds this VFDR acceptable.</p> <p>Updating the change evaluation to document that Cable [REDACTED] is not within the ZOI of a significant ignition source is an implementation item (SE Section 2.9; Item 21).</p>

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
<p>(continued)</p> <p>97</p>	<p style="text-align: center;">- CONTINUED -</p> <p>Exception [REDACTED] addresses the potential for [REDACTED] to spuriously open, which could fill the pressurizer, thereby resulting in a solid RCS.</p> <p>A new manual action is proposed to mitigate the spurious actuation. ARs 134694 and 137435 address this issue.</p> <p>Because this action is not associated with the credited train, it is considered to be for the fire affected train, and would therefore be considered allowable under the current licensing basis.</p> <p>Thermal barrier cooling is available, such that the running charging pump could be secured in order to prevent solid plant conditions, thereby allowing more time to close [REDACTED].</p>	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	<p>the top row of the MCC, and by running Meggitt cable down past the top row of breakers such that the cables are not at risk except for a single breaker.</p> <p>Fire modeling demonstrated that any non-fire rated cable in the top cable run and in the first row of the MCC could be damaged. This is documented in a site-specific calculation.</p> <p>Thus, one of the MOV circuits will remain free of fire damage in the event of a fire in MCC [REDACTED].</p> <p>The change evaluation also showed that this configuration provides adequate defense-in-depth and safety margin.</p> <p>Should either [REDACTED] or [REDACTED] spuriously open, the running CSIP can be secured. The spuriously opened valve could then be manually closed using portable lighting.</p> <p>EC 70350 will provide an additional source of RCS makeup/seal injection.</p>	<p style="text-align: center;">- CONTINUED -</p> <p>Based on (1) the installed Meggitt cable, (2) the relocation of the breakers out of the top row of the MCC, (3) the fire model analysis performed by the licensee, (4) the results of the change evaluation concluding that the change is acceptable from a risk, defense-in-depth, and safety margin standpoint, and (5) the commitment to install the alternate seal injection system, the NRC staff finds this VFDR acceptable.</p>

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
<p>(continued)</p> <p>170</p>	<p>- CONTINUED -</p> <p>The only issue in this area is closing either [REDACTED] or [REDACTED] in order to prevent introduction of the VCT cover gas to the suction of the [REDACTED] pumps.</p>	<p>(continued)</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	<p>influence of a fixed ignition source and will remain free of fire damage.</p> <p>In addition, EC 70350 will provide another source of RCS makeup and seal injection that is not dependent on the CSIP.</p>	<p>- CONTINUED -</p> <p>Based on (1) the relationship between the target(s) and the zone of influence of the ignition sources and (2) the commitment to install the alternate seal injection system, the NRC staff finds this VFDR acceptable.</p>
<p>316</p>	<p>The MT™ ERFBS is credited as a 3-hour fire barrier in this area, but is not a fully rated 3-hour fire barrier.</p> <p>The MT™ ERFBS does not provide a 3-hour fire barrier for protection of power Cables [REDACTED], [REDACTED], and [REDACTED] in Conduit [REDACTED].</p>	<p>[REDACTED]</p>	<p>The change evaluation demonstrated that the MT™ ERFBS as tested provide adequate protection. The affected cables are not within the zone on influence of a fixed ignition source. Accordingly, the associated MT™ barrier is acceptable because it is not subject to fire damage.</p> <p>The MT™ ERFBS is credited for 115 minutes (1 hour and 55 minutes), in lieu of the 3 hours necessitated by the deterministic requirements.</p> <p>The risk evaluation for plant changes in this area was assessed quantitatively for acceptability using the delta-CDF and delta-LERF criteria from NEI 04-02, Section 5.3.5, and RG 1.205.</p>	<p>Based on (1) the MT™ ERFBS fire barrier not being within the zone of influence of a fixed ignition source, (2) the barrier fire duration being based on appropriate testing, (3) the proposed modifications to bring the fire barrier up to the tested configuration, and (4) the calculated change in risk meeting the associated acceptance requirements, the NRC staff finds this VFDR acceptable.</p>

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
<p>(continued)</p> <p>316</p>	<p style="text-align: center;">- CONTINUED -</p> <p>The MT™ ERFBS is credited as a 3-hour fire barrier in this area, but is not a fully rated 3-hour fire barrier.</p> <p>The MT™ ERFBS does not provide a 3-hour fire barrier for protection of power Cables [REDACTED], [REDACTED], and [REDACTED] in Conduit [REDACTED].</p>	<p>(continued)</p> <p>[REDACTED]</p>	<p>The associated change in risk is below the RG 1.205 acceptance criteria. As such, the change in risk due to the MT™ ERFBS reduced rating has a negligible contribution to the change in CDF results.</p> <p>This is due to the difference in the probability of non suppression between 115 min. and 3 hours being low.</p> <p>The delta-CDF and delta-LERF results are lower than the threshold which requires NRC notification per the standard fire protection license condition included in RG 1.205.</p> <p>The change process targets associated with the MT™ ERFBS are not within the zone of influence of significant ignition sources and so are considered to be free of fire damage, and therefore considered acceptable "as-is."</p> <p>EC 69765 will modify the MT™ ERFBS consistent with the tested configuration for the fire resistance assumed.</p>	<p style="text-align: center;">- CONTINUED -</p> <p>Based on (1) the MT™ ERFBS fire barrier not being within the zone of influence of a fixed ignition source, (2) the barrier fire duration being based on appropriate testing, (3) the proposed modifications to bring the fire barrier up to the tested configuration, and (4) the calculated change in risk meeting the associated acceptance requirements, the NRC staff finds this VFDR acceptable.</p>

Fire Area [REDACTED]

The licensee analyzed this fire area using the fire risk evaluation approach in accordance with NFPA 805 Section 4.2.4.2, but also applied deterministic simplifying assumptions in order to credit those portions of the facility design that meet the deterministic requirements of NFPA 805 Section 4.2.3. The licensee identified the structures, systems, and components (SSCs) necessary to meet the nuclear safety performance criteria (NSPC) in this fire area.

Evaluation of Fire Suppression Effects on the Nuclear Safety Performance Criteria for Fire Area [REDACTED]

The licensee stated in LAR Attachment C, "NEI 04-02 Table B-3 – Fire Area Transition," that damage to plant areas and equipment from the accumulation of water discharged from sprinkler systems and hose lines is minimized by the provision of floor drainage systems. Floor water surcharge is estimated to be insignificant since excess water can overflow to adjacent areas. Runoff is directed to the floor drainage transfer tank or the storm drainage system, as detailed in HNP FSAR Section 9.3.3. Therefore, fire suppression activities are not expected to adversely affect achievement of the nuclear safety performance criteria.

Based on the information provided by the licensee in the NFPA 805 LAR, the NRC staff finds the licensee's evaluation of fire suppression effects on the NSPC acceptable because the results of the licensee's analysis indicate that fire suppression activities will not adversely impact achievement of the nuclear safety performance criteria.

Fire Area [REDACTED] Deviations

Based on the information provided in the LAR, the licensee credited three previously approved deviations from the existing fire protection requirements. The licensee utilized the process described in LAR Section 4.2.2.2.2, "Results of the Licensing Action Review," to carry forward these deviations, which requires a determination of the basis of acceptability and a determination that the basis of acceptability is still valid.

Deviation	Basis and Continuing Validity	Evaluation
Deviation from NUREG-0800 BTP CMEB 9.5-1, Section C.5.b(2), for providing full area wide suppression and detection.	The deviation was approved based on low combustible loading in the fire area, the lack of concentrations of cable trays, and the existing protection provided for the safe shutdown equipment. The conditions forming the basis for the previous NRC staff approval of this deviation have not changed.	Based on the previous staff approval of this deviation and the statement by the licensee that the basis remains valid, the NRC staff finds this deviation acceptable.

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
<p>(continued)</p> <p>159</p>	<p align="center">- CONTINUED -</p> <p>Exception [REDACTED] addresses the potential for [REDACTED] to spuriously open, which could fill the pressurizer, thereby resulting in a solid RCS.</p> <p>A new manual action is proposed to mitigate the spurious actuation. AR 159304 (EC 58779) and AR 80304 document inadequate task lighting at [REDACTED] and [REDACTED].</p> <p>Because this action is not associated with the credited train, it is considered to be for the fire affected train, and would therefore be considered allowable under the current licensing basis.</p> <p>Thermal barrier cooling is not available, such that the running charging pump is required to maintain RCP seal integrity.</p> <p>A hydraulic study is needed to specify the time available to adequately perform this manual action.</p> <p>EC 67772 is evaluating a modification that would preclude spurious operation of this valve for a fire anywhere except at the valve breaker. At most, one of the valves ([REDACTED], [REDACTED], or [REDACTED]) may need to be manually closed.</p>	<p>(continued)</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	<p>Fire modeling demonstrated that any non-fire rated cable in the top cable run and in the first row of the MCC could be damaged. This is documented in a site-specific calculation.</p> <p>Thus, at least two of the three MOV circuits will remain free of fire damage in the event of a fire in the column of one breaker's cubicle.</p> <p>The change evaluation also showed that this configuration provides adequate defense-in-depth and safety margin.</p> <p>Should either [REDACTED], [REDACTED], or [REDACTED] spuriously open, the running CSIP can be secured. The spuriously opened valve could then be manually closed using portable lighting.</p> <p>EC 70350 will provide an additional source of RCS makeup/seal injection.</p>	<p align="center">- CONTINUED -</p> <p>Based on (1) the installed Meggitt cable, (2) the relocation of the supply breakers out of the same vertical stack, (3) the fire model analysis performed by the licensee which demonstrates that two of the three MOV circuits will remain free of fire damage, (4) the results of the change evaluation concluding that the change is acceptable from a risk, defense-in-depth, and safety margin standpoint, and (5) the commitment to install the alternate seal injection system, the NRC staff finds this VFDR acceptable.</p>

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
<p>(continued)</p> <p>160</p>	<p align="center">- CONTINUED -</p> <p>Exception [REDACTED] addresses the potential for [REDACTED] to spuriously open, which could fill the pressurizer, thereby resulting in a solid RCS.</p> <p>A new manual action is proposed to mitigate the spurious actuation.</p> <p>Because this action is not associated with the credited train, it is considered to be for the fire affected train, and would therefore be considered allowable under the current licensing basis.</p> <p>Thermal barrier cooling is not available, such that the running charging pump is required to maintain RCP seal integrity.</p> <p>A hydraulic study is needed to specify the time available to adequately perform this manual action.</p> <p>EC 67772 is evaluating a modification that would preclude spurious operation of this valve for a fire anywhere except at the valve breaker. At most, one of the valves ([REDACTED], [REDACTED], or [REDACTED]) may need to be manually closed.</p>	<p>(continued)</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	<p>Fire modeling demonstrated that any non-fire rated cable in the top cable run and in the first row of the MCC could be damaged. This is documented in a site-specific calculation.</p> <p>Thus, at least two of the three MOV circuits will remain free of fire damage in the event of a fire in the column of one breaker's cubicle.</p> <p>The change evaluation also showed that this configuration provides adequate defense-in-depth and safety margin.</p> <p>Should either [REDACTED], [REDACTED], or [REDACTED] spuriously open, the running CSIP can be secured. The spuriously opened valve could then be manually closed using portable lighting.</p> <p>EC 70350 will provide an additional source of RCS makeup/seal injection.</p>	<p align="center">- CONTINUED -</p> <p>Based on (1) the installed Meggitt cable, (2) the relocation of the supply breakers out of the same vertical stack, (3) the fire model analysis performed by the licensee which demonstrates that two of the three MOV circuits will remain free of fire damage, (4) the results of the change evaluation concluding that the change is acceptable from a risk, defense-in-depth, and safety margin standpoint, and (5) the commitment to install the alternate seal injection system, the NRC staff finds this VFDR acceptable.</p>

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
(continued) 5	<p align="center">- CONTINUED -</p> <p>[REDACTED] and [REDACTED] could spuriously open, resulting in the loss of RWST inventory to the containment sump.</p> <p>This issue is being addressed in the change evaluation for this fire area.</p>	<p align="center">(continued)</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	<p>column and are not located in the top row. Thus, one cubicle will remain free of fire damage in the event of a fire in the column of the other breaker's cubicle.</p> <p>This fire area is a transient no storage location. The change evaluation also showed that this configuration provides adequate defense-in-depth and safety margin.</p> <p>In addition, EC 70350 would provide seal injection and RCS makeup from a source independent of the RWST.</p>	<p align="center">- CONTINUED -</p> <p>Based on (1) the fire modeling calculation performed by the licensee which demonstrates that one of the valves will remain free of fire damage, (2) the fact that the fire area has been designated as a transient combustible exclusion zone, and (3) the commitment to install the alternate seal injection system, the NRC staff finds this VFDR acceptable.</p>

The fire risk evaluation for this fire area determined that the additional risk incorporated because of these VFDRs is zero.

Recovery Actions (RAs)

The licensee did not identify any recovery actions required for this fire area.

Recovery Actions Credited for Defense-in-Depth (RA-DID)

Component ID	Component Name	Licensee's Description of Action
[REDACTED]	HEAT EXCHANGER [REDACTED] FLOW CONTROL ([REDACTED])	Manually control RHR flow by locally throttling [REDACTED] and [REDACTED] per existing procedures.
[REDACTED]	RCS LOOP TO RHR PUMP [REDACTED] ISOLATION ([REDACTED])	Manually open [REDACTED] in Fire Zone [REDACTED].

Deviation	Basis and Continuing Validity	Evaluation
Deviation from NUREG-0800, BTP CMEB 9.5-1, Section C.7.c, for both trains of cables in the [REDACTED] rooms.	The deviation was approved based on the train [REDACTED] cables being protected by a 1-hour rated fire barrier with an automatic detection and suppression system. The conditions forming the basis for the previous NRC staff approval of this deviation have not changed.	Based on (1) the installed HEMYC™ ERFBS, (1) the establishment of the fire barrier rating based on required fire testing, and (3) the determination that the fire area is acceptable from a risk, defense-in-depth, and safety margin standpoint, the NRC staff finds this deviation acceptable.

Variations from the Deterministic Requirements (VFDRs)

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
183	The hot standby manual action credited for [REDACTED] supports use of the credited train [REDACTED] motor driven AFW pump which supplies steam generator [REDACTED]. Under the current licensing basis, this action is considered unallowable and a change evaluation is required.	[REDACTED]	This fire area is a transient no storage location. The only fixed ignition source near these cables is Auxiliary Transfer Panel [REDACTED]. EC 69501 will install a VEWFDS in Auxiliary Transfer Panel [REDACTED], which will render the affected cables not within the ZOI of a significant fixed ignition source.	Based on (1) the relationship between the target(s) and the zone of influence of the ignition sources, (2) the fact that the fire area has been designated as a transient combustible exclusion zone, and (3) the proposed installation of a VEWFDS in Auxiliary Transfer Panel [REDACTED], the NRC staff finds this VFDR acceptable.

Deviation	Basis and Continuing Validity	Evaluation
Deviation from NUREG-0800, BTP CMEB 9.5-1, Section C.7.c, for both trains of cables in the [REDACTED] rooms.	The deviation was approved based on the train [REDACTED] cables being protected by a 1-hour rated fire barrier with an automatic detection and suppression system. The conditions forming the basis for the previous NRC staff approval of this deviation have not changed.	Based on (1) the installed HEMYC™ ERFBS, (1) the establishment of the fire barrier rating based on required fire testing, and (3) the determination that the fire area is acceptable from a risk, defense-in-depth, and safety margin standpoint, the NRC staff finds this deviation acceptable.

Variations from the Deterministic Requirements (VFDRs)

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
117	The hot standby manual action credited for [REDACTED] is required to establish a flow path for the charging path minimum flow. This flow path is required for the credited train [REDACTED] charging pump. Under the current licensing basis, this action is considered unallowable and a change evaluation is required.	[REDACTED]	This fire area is a transient no storage location. The only fixed ignition source near these cables is Auxiliary Transfer Panel [REDACTED]. EC 69501 will install a VEWFDS in Auxiliary Transfer Panel [REDACTED], which will render the affected cables not within the ZOI of a significant fixed ignition source. In addition, if the running CSIP were to fail, EC 70350 will provide an additional source of RCS makeup and seal injection.	Based on (1) the relationship between the target(s) and the zone of influence of the ignition sources, (2) the fact that the fire area has been designated as a transient combustible exclusion zone, (3) the proposed installation of a VEWFDS in Auxiliary Transfer Panel [REDACTED], and (4) the commitment to install the alternate seal injection system, the NRC staff finds this VFDR acceptable.

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
295	<p>The issue is the potential multiple spurious opening of either [REDACTED] or [REDACTED], concurrent with the spurious opening of the RCS head vent valves ([REDACTED]).</p> <p>The HEMYC™ ERFBS credited in this fire area for [REDACTED] is not a fully rated 1-hour fire barrier.</p>	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	<p>This fire area is a transient no storage location.</p> <p>The change evaluation showed that the affected cables are not within the zone of influence of a significant ignition source.</p> <p>For [REDACTED], Cable [REDACTED] (Conduit [REDACTED]) is wrapped with HEMYC™, which is not a fully rated 1-hour fire barrier. The containment penetration junction box ([REDACTED]), located on the containment wall, is unwrapped.</p> <p>In addition, the RCS head vents are designed to limit the mass flow rate of reactor coolant through the vessel head vent to less than the makeup capacity of a single charging/safety injection pump in the event of a line break or inadvertent operation.</p>	<p>Based on (1) the relationship between the target(s) and the zone of influence of the ignition sources, (2) the fact that the fire area has been designated as a transient combustible exclusion zone, (3) the designed mass flow limit to less than the makeup capacity of a single charging/safety injection pump, and (4) the calculated change in risk meeting the associated acceptance requirements, the NRC staff finds this VFDR acceptable.</p>

The fire risk evaluation for this fire area determined that the additional risk incorporated because of these VFDRs is zero.

Recovery Actions (RAs)

The licensee did not identify any recovery actions required for this fire area.

Recovery Actions Credited for Defense-in-Depth (RA-DID)

Component ID	Component Name	Licensee's Description of Action
[REDACTED]	HEAT EXCHANGER [REDACTED] FLOW CONTROL ([REDACTED])	Manually control RHR flow by locally throttling [REDACTED] and [REDACTED] per existing procedures.
[REDACTED]	RCS LOOP TO RHR PUMP [REDACTED] ISOLATION ([REDACTED])	Manually open [REDACTED] in Fire Zone [REDACTED].
[REDACTED]	RCS LOOP TO RHR PUMP [REDACTED] ISOLATION VALVE ([REDACTED]) CIV	Manually open [REDACTED] in Fire Zone [REDACTED].
[REDACTED]	HEAT EXCHANGER [REDACTED] BYPASS FLOW CONTROL	Manually control RHR flow by locally throttling [REDACTED] and [REDACTED] per existing procedures.
[REDACTED]	HEAT EXCHANGER [REDACTED] FLOW CONTROL ([REDACTED])	Manually control RHR flow by locally throttling [REDACTED] and [REDACTED] per existing procedures.
[REDACTED]	ACCUMULATOR [REDACTED] DISCHARGE VALVE	De-energize [REDACTED], at breaker [REDACTED] ([REDACTED]). Locally shut [REDACTED] in Fire Zone [REDACTED].
[REDACTED]	ACCUMULATOR [REDACTED] DISCHARGE VALVE	De-energize [REDACTED], at breaker [REDACTED] ([REDACTED]). Locally shut [REDACTED] in Fire Zone [REDACTED].
[REDACTED]	ACCUMULATOR [REDACTED] DISCHARGE VALVE	De-energize [REDACTED], at breaker [REDACTED] ([REDACTED]). Locally shut [REDACTED] in Fire Zone [REDACTED].
[REDACTED]	-----	Align [REDACTED] pumps to [REDACTED] pump using [REDACTED], Section 8.1. 2 MOVs to be opened and a tell-tale drain valve to be shut – not necessary until 12 hours after the event.
[REDACTED]	-----	Pull the solid state protection system (SSPS) fuses at the SSPS Cabinets in Fire Area [REDACTED] prior to loss of DC power.
[REDACTED]	-----	Pull the SSPS fuses at the SSPS Cabinets in Fire Area [REDACTED] prior to loss of DC power.

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
<p>(continued)</p> <p>364</p>	<p>- CONTINUED -</p> <p>The HEMYC™ ERFBS credited in this area is not a fully rated 1-hour fire barrier.</p> <p>The change evaluation process is determining whether the installed fire barriers provide an adequate level of protection for the hazards in the fire area.</p>	<p>(continued)</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	<p>negligible contribution to the change in CDF results.</p> <p>This is due to the difference in the probability of non suppression between 25 minutes and 60 minutes being low.</p> <p>The delta-CDF and delta-LERF results are lower than the threshold which requires NRC notification per the standard fire protection license condition included in RG 1.205.</p> <p>The change process targets associated with the HEMYC™ ERFBS are not within the zone of influence of significant ignition sources and so are considered to be free of fire damage, and therefore considered acceptable "as-is."</p> <p>EC 69764 will modify the HEMYC™ ERFBS to be consistent with the tested configuration for the fire resistance assumed.</p>	<p>- CONTINUED -</p> <p>Based on (1) the relationship between the target(s) and the zone of influence of the ignition sources, (2) the barrier fire duration being based on appropriate testing, (3) the proposed modifications to bring the fire barrier up to the tested configuration, and (4) the calculated change in risk meeting the associated acceptance requirements, the NRC staff finds this VFDR acceptable.</p>
<p>8</p>	<p>The 1-hour rated ERFBS on Cable [REDACTED] for [REDACTED] may not be adequate.</p> <p>The change evaluation process is determining whether the installed fire barriers provide an adequate level of protection for the hazards in the fire area.</p>	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	<p>The change evaluation showed that the affected cables are not within the zone of influence of a significant ignition source.</p>	<p>Based on the relationship between the target(s) and the zone of influence of the ignition sources, the NRC staff finds this VFDR acceptable.</p>

Fire Area [REDACTED]

The licensee analyzed this fire area using the fire risk evaluation approach in accordance with NFPA 805 Section 4.2.4.2, but also applied deterministic simplifying assumptions in order to credit those portions of the facility design that meet the deterministic requirements of NFPA 805 Section 4.2.3. The licensee identified the structures, systems, and components (SSCs) necessary to meet the nuclear safety performance criteria (NSPC) in this fire area.

Evaluation of Fire Suppression Effects on the Nuclear Safety Performance Criteria for Fire Area [REDACTED]

The licensee stated in LAR Attachment C, "NEI 04-02 Table B-3 – Fire Area Transition," that this fire area does not have an installed automatic suppression system. In the event of a fire requiring the use of a manual hose station, accumulated water can migrate to adjacent areas equipped with floor drains. Drainage into the adjacent areas will not damage safety-related equipment. Therefore, fire suppression activities will not adversely affect achievement of the nuclear safety performance criteria.

Based on the information provided by the licensee in the NFPA 805 LAR, the NRC staff finds the licensee's evaluation of fire suppression effects on the NSPC acceptable because the results of the licensee's analysis indicate that fire suppression activities will not adversely impact achievement of the nuclear safety performance criteria.

Fire Area [REDACTED] Deviations

Based on the information provided in the LAR, the licensee credited five previously approved deviations from the existing fire protection requirements. The licensee utilized the process described in LAR Section 4.2.2.2, "Results of the Licensing Action Review," to carry forward these deviations, which requires a determination of the basis of acceptability and a determination that the basis of acceptability is still valid.

Deviation	Basis and Continuing Validity	Evaluation
Deviation from NUREG-0800, BTP CMEB 9.5-1, Section C.5.a, in that not all penetrations are sealed with equivalently rated fire damper assemblies, door assemblies, or seals.	The deviation was approved based on the conditions on either side of the penetrations, the installed fire protection features, and the physical separation of redundant safe shutdown equipment. The conditions forming the basis for the previous NRC staff approval of this deviation have not changed.	Based on the previous staff approval of this deviation and the statement by the licensee that the basis remains valid, the NRC staff finds this deviation acceptable.

Variations from the Deterministic Requirements (VFDRs)

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
14	<p>The MT™ ERFBS is credited as a 3-hour fire barrier in this area, but is not a fully rated 3-hour fire barrier.</p> <p>The change evaluation process is determining whether the installed fire barriers provide an adequate level of protection for the hazards in the fire area.</p>	[REDACTED]	<p>The change evaluation demonstrated that there is no MT™ ERFBS that falls within the ZOI of a significant ignition source. The MT™ ERFBS are therefore only subject to the potential impacts of a hot gas layer.</p> <p>There is no fire scenario considered capable of challenging the system's minimum performance based on a fire rating of 1 hour 55 minutes; therefore, no damage is assumed to occur to the protected circuits.</p> <p>The MT™ ERFBS is credited for 115 minutes (1 hour and 55 minutes), in lieu of the 3 hours necessitated by the deterministic requirements.</p> <p>The risk evaluation for plant changes in this area was assessed quantitatively for acceptability using the delta-CDF and delta-LERF criteria from NEI 04-02, Section 5.3.5, and RG 1.205.</p>	<p>Based on (1) the MT™ ERFBS fire barrier not being within the zone of influence of a significant ignition source, (2) the barrier fire duration being based on appropriate testing, (3) the proposed modifications to bring the fire barrier up to the tested configuration, and (4) the calculated change in risk meeting the associated acceptance requirements, the NRC staff finds this VFDR acceptable.</p>

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
<p>(continued)</p> <p>14</p>	<p>- CONTINUED -</p> <p>The MT™ ERFBS is credited as a 3-hour fire barrier in this area, but is not a fully rated 3-hour fire barrier.</p> <p>The change evaluation process is determining whether the installed fire barriers provide an adequate level of protection for the hazards in the fire area.</p>	<p>(continued)</p> <p>[REDACTED]</p>	<p>The associated change in risk is below the RG 1.205 acceptance criteria. As such, the change in risk due to the MT™ ERFBS reduced rating has a negligible contribution to the change in CDF results.</p> <p>This is due to the difference in the probability of non suppression between 115 min. and 3 hours being low.</p> <p>The delta-CDF and delta-LERF results are lower than the threshold which requires NRC notification per the standard fire protection license condition included in RG 1.205.</p> <p>The change process targets associated with the MT™ ERFBS are not within the zone of influence of significant ignition sources and so are considered to be free of fire damage, and therefore considered acceptable "as-is."</p> <p>EC 69765 will modify the MT™ ERFBS consistent with the tested configuration for the fire resistance assumed.</p>	<p>- CONTINUED -</p> <p>Based on (1) the MT™ ERFBS fire barrier not being within the zone of influence of a significant ignition source, (2) the barrier fire duration being based on appropriate testing, (3) the proposed modifications to bring the fire barrier up to the tested configuration, and (4) the calculated change in risk meeting the associated acceptance requirements, the NRC staff finds this VFDR acceptable.</p>

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
147	<p>The hot standby manual action credited for [REDACTED] is required to establish a flow path for the charging path minimum flow.</p> <p>This flow path is required for the credited train [REDACTED] charging pump.</p> <p>Under the current licensing basis, this action is considered unallowable and a change evaluation is required.</p>	[REDACTED]	<p>The change evaluation showed that Cable [REDACTED] is not within the ZOI of a significant ignition source.</p> <p>Cables [REDACTED] and [REDACTED] are within the ZOI of the Transformer ([REDACTED]), the [REDACTED] 480V Auxiliary Switchgear ([REDACTED]), and the [REDACTED] Multiplexer Unit ([REDACTED]).</p> <p>EC 68646 is adding thermal shields above [REDACTED] in order to reduce the overall risk in this fire area.</p> <p>In addition, if the running CSIP were to fail, EC 70350 will provide an additional source of RCS makeup and seal injection.</p>	<p>Based on (1) the relationship between the target(s) and the zone of influence of the ignition sources, (2) the proposed installation of thermal shields above [REDACTED], and (3) the commitment to install the alternate seal injection system, the NRC staff finds this VFDR acceptable.</p>
15	<p>The required manual action for [REDACTED] is a part of the credited train and is necessary to establish hot standby decay heat removal.</p> <p>Under the current licensing basis, this action is considered unallowable and a change evaluation is required.</p>	[REDACTED]	<p>EC 68645 will remove the cables for [REDACTED] from the area, such that a flow path of water to the [REDACTED] SG is assured. All other requirements to use the [REDACTED] SG for decay heat removal are met for this area. Therefore, [REDACTED] will no longer be required to maintain hot standby.</p>	<p>Based on the proposed installation of EC 68645, a flow path of water to the [REDACTED] steam generator will be assured. Accordingly, the NRC staff finds this VFDR acceptable.</p>

HNP's Open Item No.	VFDR Description	Component (Cables)	Disposition	NRC Evaluation
16	<p>[REDACTED] may spuriously close due to concurrent intra-cable hot shorts on Cable [REDACTED] and Cable [REDACTED], or due to an inter-cable hot short on Cable [REDACTED].</p> <p>This could result in a loss of suction to the running charging pump and unrecoverable pump damage.</p> <p>This issue is being addressed in the change evaluation for this fire area.</p>	[REDACTED]	<p>The change evaluation showed that the cables for [REDACTED] are not within the zone of influence of a significant ignition source.</p> <p>EC 68646 is adding thermal shields above four ignition sources that could lead to a hot gas layer.</p> <p>In addition, EC 70350 will provide alternate RCS makeup capability in the event that [REDACTED] spuriously closes and disables the running CSIP.</p>	<p>Based on (1) the relationship between the target(s) and the zone of influence of the ignition sources, (2) , the proposed installation of thermal shields above the four ignition sources that could lead to a hot gas layer, and (3) the commitment to install the alternate seal injection system, the NRC staff finds this VFDR acceptable.</p>
19	<p>Cable damage may cause the spurious opening of [REDACTED] and [REDACTED], which could result in the loss of RWST inventory to the containment sump.</p> <p>This issue is being addressed in the change evaluation for this fire area.</p>	[REDACTED]	<p>The change evaluation showed that except for Cables [REDACTED] and [REDACTED], the affected cables are not within the ZOI of a significant ignition source.</p> <p>Cables [REDACTED] and [REDACTED] are within the ZOI of the [REDACTED] Transformer ([REDACTED]), the [REDACTED] 480V Auxiliary Switchgear ([REDACTED]), Distribution Panel [REDACTED] ([REDACTED]), Sequencer Panel [REDACTED] ([REDACTED]), and other significant sources.</p> <p>EC 68646 is adding thermal shields above [REDACTED] in order to reduce the risk in the fire area.</p> <p>In addition, if the RWST were to drain, EC 70350 will provide an additional source of RCS makeup and seal injection.</p>	<p>Based on (1) the relationship between the target(s) and the zone of influence of the ignition sources, (2) the proposed installation of thermal shields above [REDACTED], and (3) the commitment to install the alternate seal injection system, the NRC staff finds this VFDR acceptable.</p>

C. Burton

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- Page 392: Open Item 142 -- in the "Disposition" field, the word "Meggit" should be changed to "Meggitt."
- Page 421: The "Evaluation of Fire Suppression Effects..." header should end with "Fire Area [REDACTED]," not "Fire Area [REDACTED]."
- Page 442: Deviation "Evaluation" field -- the word "ERBS" should be changed to "ERFBS."
- Page 456: Deviation "Evaluation" field -- the word "ERBS" should be changed to "ERFBS."
- Page 469: Spacing should be changed to move Recovery Actions statement onto page 469.
- Page 470: Spacing should be changed to move "Recovery Actions Credited for Defense-in-Depth (RA-DID)" header to top of page 470.
- Page 490: The "Evaluation of Fire Suppression Effects..." header should end with "Fire Area [REDACTED]," not "Fire Area [REDACTED]."
- Page 495: Open Item 19 -- in the "Disposition" field, the word "shange" should be changed to "change."

The NRC staff determined that these typographical and formatting errors were inadvertently introduced. The corrections do not change any of the conclusions in the safety evaluation related to the amendment and do not affect the associated *Federal Register* notice to the public.

Corrected safety evaluation pages are enclosed. We regret any inconvenience this may have caused. If you have any questions regarding this issue, please contact me at 301-415-3178.

Sincerely,
/RA/

Brenda Mozafari, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-400

Enclosure:
Corrections to NRC Safety Evaluation
for Amendment No.133 to NPF-63

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NRR-106

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