Progress Energy

FEB 05 2009

Serial: HNP-08-119
10 CFR 50.90

U. S. Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, D.C. 20555-0001

SHEARON HARRIS NUCLEAR POWER PLANT, UNIT 1
DOCKET NO. 50-400/LICENSE NO. NPF-63
NON-SECURITY SENSITIVE VERSION OF SUPPLEMENT TO REQUEST FOR LICENSE AMENDMENT TO ADOPT NFPA 805 PERFORMANCE-BASED STANDARDS FOR FIRE PROTECTION FOR LIGHT WATER REACTOR GENERATING PLANTS (2001 EDITION)

Reference: Letter from C. L. Burton to the Nuclear Regulatory Commission (Serial: HNP-08-113), "Supplement to Request for License Amendment to Adopt NFPA 805 Performance-Based Standards for Fire Protection for Light Water Reactor Generating Plants (2001 Edition)," dated November 14, 2008

Ladies and Gentlemen:

Harris Nuclear Plant's NFPA 805 License Amendment Request Supplement 1 (Reference) included Attachments containing sensitive information submitted under 10 CFR 2.390(d)(1). Enclosed please find non-security sensitive versions, in which the information previously identified as security sensitive has been redacted, of the following Attachments:

- Attachment A - NEI 04-02 Table B-1 - Transition of Fundamental FP Program and Design Elements (NFPA 805 Chapter 3)
- Attachment G - Operator Manual Actions - Transition to Recovery Actions
- Attachment S - Plant Modifications
- Attachment W - Internal Events PRA Quality
- Attachment X - Fire PRA Quality

Please refer any questions regarding this submittal to me at (919) 362-3137.

Sincerely,

David H. Corlett
Supervisor – Licensing/Regulatory Programs
Harris Nuclear Plant

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Enclosures:
1. Attachment A – NEI 04-02 Table B-1 - Transition of Fundamental FP Program and Design Elements (NFPA 805 Chapter 3) - Non-Security Sensitive
2. Attachment G - Operator Manual Actions – Transition to Recovery Actions – Non-Security Sensitive
3. Attachment S - Plant Modifications – Non-Security Sensitive
4. Attachment W - Internal Events PRA Quality - Non-Security Sensitive
5. Attachment X - Fire PRA Quality - Non-Security Sensitive

Attachment A – NEI 04-02 Table B-1 - Transition of Fundamental FP Program and Design Elements (NFPA 805 Chapter 3)

(Non-Security Sensitive)

47 Pages

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.1 General	3.1* General. This chapter contains the fundamental elements of the fire protection program and specifies the minimum design requirements for fire protection systems and features. These fire protection program elements and minimum design requirements shall not be subject to the performance-based methods permitted elsewhere in this standard. Previously approved alternatives from the fundamental protection program attributes of this chapter by the AHJ take precedence over the requirements contained herein.	N/A	N/A - General statement; No technical requirements	HNP-M/BMRK-0011, Code Compliance Evaluation NFPA 805,2003, Rev. 000	All
3.2 Fire Protection Plan	N/A	N/A	N/A - General statement; No technical requirements		
3.2.1 Intent	3.2.1 Intent. A site-wide fire protection plan shall be established. This plan shall document management policy and program direction and shall define the responsibilities of those individuals responsible for the plan's implementation. This section establishes the criteria for an integrated combination of components, procedures, and personnel to implement all fire protection program activities	Complies	No Additional Clarification	FPP-001, Fire Protection Program Manual, Rev. 029	All
3.2.2 Management Policy Direction and Responsibility.	3.2.2* Management Policy Direction and Responsibility. A policy document shall be prepared that defines management authority and responsibilities and establishes the general policy for the site fire protection program.	Complies	No Additional Clarification	FPP-001, Fire Protection Program Manual, Rev. 029	All
3.2.2.1 [Management Policy on Senior Management]	3.2.2.1* The policy document shall designate the senior management position with immediate authority and responsibility for the fire protection program.	Complies	No Additional Clarification	FPP-001, Fire Protection Program Manual, Rev. 029	All
3.2.2.2 [Management Policy on Daily Administration]	3.2.2.2* The policy document shall designate a position responsible for the daily administration and coordination of the fire protection program and its implementation.	Complies	No Additional Clarification	FPP-001, Fire Protection Program Manual, Rev. 029	Section 4.2.6
3.2.2.3 [Management Policy on Interfaces]	3.2.2.3* The policy document shall define the fire protection interfaces with other organizations and assign responsibilities for the coordination of activities. In addition, this policy document shall identify the various plant positions having the authority for implementing the various areas of the fire protection program.	Complies	No Additional Clarification	FPP-001, Fire Protection Program Manual, Rev. 029	Section 4.0

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.2.2.4 [Management Policy on AHJ]	3.2.2.4* The policy document shall identify the appropriate AHJ for the various areas of the fire protection program.	Complies	[redacted]	FPP-001, Fire Protection Program Manual, Rev. 029	Section 3.2
3.2.3 Procedures	3.2.3* Procedures. Procedures shall be established for implementation of the fire protection program. In addition to procedures that could be required by other sections of the standard, the procedures to accomplish the following shall be established: (1) * Inspection, testing, and maintenance for fire protection systems and features credited by the fire protection program (2) * Compensatory actions implemented when fire protection systems and other systems credited by the fire protection program and this standard cannot perform their intended function and limits on impairment duration (3) * Reviews of fire protection program — related performance and trends (4) Reviews of physical plant modifications and procedure changes for impact on the fire protection program (5) Long-term maintenance and configuration of the fire protection program (6) Emergency response procedures for the plant industrial fire brigade.	Complies	No Additional Clarification	FPP-001, Fire Protection Program Manual, Rev. 029	Attachment 1
3.3 Prevention	3.3 Prevention. A fire prevention program with the goal of preventing a fire from starting shall be established, documented, and implemented as part of the fire protection program. The two basic components of the fire prevention program shall consist of both of the following: (1) Prevention of fires and fire spread by controls on operational activities (2) Design controls that restrict the use of combustible materials The design control requirements listed in the remainder of this section shall be provided as described.	Complies	No Further Clarification	FPP-001, Fire Protection Program Manual, Rev. 029	Sections 8.2 and 8.3 and Attachment 1

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.3.1 Fire Prevention for Operational Activities.	3.3.1 Fire Prevention for Operational Activities. The fire prevention program activities shall consist of the necessary elements to address the control of ignition sources and the use of transient combustible materials during all aspects of plant operations. The fire prevention program shall focus on the human and programmatic elements necessary to prevent fires from starting or, should a fire start, to keep the fire as small as possible.	Complies	No Additional Clarification	FPP-001, Fire Protection Program Manual, Rev. 029 NLS-86-137, Rev 3 Point by Point Comparison of HNP to Requirements of NUREG 0800, 5/7/1986 SHNPP FSAR 9.5.1	Section 8.2
3.3.1.1 General Fire Prevention Activities.	3.3.1.1 General Fire Prevention Activities. The fire prevention activities shall include but not be limited to the following program elements: (1) Training on fire safety information for all employees and contractors including, as a minimum, familiarization with plant fire prevention procedures, fire reporting, and plant emergency alarms (2) * Documented plant inspections including provisions for corrective actions for conditions where unanalyzed fire hazards are identified (3) * Administrative controls addressing the review of plant modifications and maintenance to ensure that both fire hazards and the impact on plant fire protection systems and features are minimized.	(1) Complies	No Additional Clarification	FAQ 06-0028, Rev. 002 GNB07H, HNP Site Specific Orientation GNR01N, Plant Access Requalification	
		(2) Complies	No Additional Clarification	AP-003, General Plant Personnel Safety and Housekeeping, Rev. 026 FPP-001, Fire Protection Program Manual, Rev. 029 OMM-001, Operations-Conduct of Operations, Rev. 067 AP-930, Plant Observation Program, Rev. 005	Section 8.3
		(3) Complies	No Additional Clarification	FPP-001, Fire Protection Program Manual, Rev. 029 ADM-NGGC-0104, Work Management Process, Rev. 030 EGR-NGGC-0005, Engineering Change, Rev. 026	Section 8.3

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.3.1.2 Control of Combustible Materials	3.3.1.2* Control of Combustible Materials. Procedures for the control of general housekeeping practices and the control of transient combustibles shall be developed and implemented. These procedures shall include but not be limited to the following program elements: (1) * Wood used within the power block shall be listed pressure-impregnated or coated with a listed fire-retardant application. Exception: Cribbing timbers 6 in. by 6 in. (15.2 cm by 15.2 cm) or larger shall not be required to be fire-retardant treated. (2) Plastic sheeting materials used in the power block shall be fire-retardant types that have passed NFPA 701, Standard Methods of Fire Tests for Flame Propagation of Textiles and Films, large-scale tests, or equivalent. (3) Waste, debris, scrap, packing materials, or other combustibles shall be removed from an area immediately following the completion of work or at the end of the shift, whichever comes first. (4) * Combustible storage or staging areas shall be designated, and limits shall be established on the types and quantities of stored materials. (5) * Controls on use and storage of flammable and combustible liquids shall be in accordance with NFPA 30, Flammable and Combustible Liquids Code, or other applicable NFPA standards. (6) * Controls on use and storage of flammable gases shall be in accordance with applicable NFPA standards.	(1) Complies	No Additional Clarification	FPP-001, Fire Protection Program Manual, Rev. 029 FPP-004, Transient Combustible Control, Rev. 019	Section 8.3 All
		(2) Complies with Clarification	[redacted]	FPP-001, Fire Protection Program Manual, Rev. 029 FPP-004, Transient Combustible Control, Rev. 019	Section 8.3

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		(4) Complies	No additional clarification	FPP-001, Fire Protection Program Manual, Rev. 029 FPP-004, Transient Combustible Control, Rev. 019	Section 8.3
		(5) Complies	No additional clarification	FPP-001, Fire Protection Program Manual, Rev. 029 HNP-M/BMRK-0014, Code Compliance Evaluation NFPA 30, Flammable and Combustible Liquids Code, Rev. 0 FAQ 06-0020, Rev. 001 FPP-004, Transient Combustible Control, Rev. 019	Section 8.3

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3.3.1.3 Control of Ignition Sources	3.3.1.3 Control of Ignition Sources	N/A	N/A - General statement no technical requirements		
3.3.1.3.1 [Control of Ignition Sources Code Requirements]	3.3.1.3.1* A hot work safety procedure shall be developed, implemented, and periodically updated as necessary in accordance with NFPA 51B, Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, and NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations.	Complies	No Additional Clarification	FAQ 06-0020, Rev. 001 HNP-M/BMRK-0013, Code Compliance Evaluation NFPA 51B, Std for Fire Prevention in use of cutting and welding processes, Rev. 00, 3/28/2008 SHNPP FSAR 9.5.1	All
3.3.1.3.2 [Control of Ignition Sources on Smoking Limitations]	3.3.1.3.2 Smoking and other possible sources of ignition shall be restricted to properly designated and supervised safe areas of the plant.	Complies	No Additional Clarification	AP-003, General Plant Personnel Safety and Housekeeping, Rev. 026 FPP-001, Fire Protection Program Manual, Rev. 029	Section 6.2.6.5 Section 8.3.2

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.3.1.3.3 [Control of Ignition Sources for Leak Testing]	3.3.1.3.3 Open flames or combustion-generated smoke shall not be permitted for leak or air flow testing	Complies	No Additional Clarification	FPP-001, Fire Protection Program Manual, Rev. 029	Section 8.3.2e
3.3.1.3.4 [Control of Ignition Sources on Portable Heaters]	3.3.1.3.4* Plant administrative procedure shall control the use of portable electrical heaters in the plant. Portable fuel-fired heaters shall not be permitted in plant areas containing equipment important to nuclear safety or where there is a potential for radiological releases resulting from a fire.	Complies	No Additional Clarification	AP-003, General Plant Personnel Safety and Housekeeping, Rev. 026	Section 5.3
3.3.2 Structural.	3.3.2 Structural. Walls, floors, and components required to maintain structural integrity shall be of noncombustible construction, as defined in NFPA 220, Standard on Types of Building Construction.	Complies Via Previous Approval	[redacted]	SHNPP FSAR 9.5.1 NLS-86-137, Rev 3 Point by Point Comparison of HNP to Requirements of NUREG 0800, 5/7/1986 NUREG-1038, Safety Evaluation Report Related to the Operation of the Shearon Harris Nuclear Power Plant, Units 1 and 2 - Docket Nos. STN-50-400 and STN 50-401, Rev. Original, 11/1/1983	9.5.1.4 Section C.5.A(9) SER - SSER4

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.3.3 Interior Finishes	3.3.3 Interior Finishes. Interior wall or ceiling finish classification shall be in accordance with NFPA 101®, Life Safety Code®, requirements for Class A materials. Interior floor finishes shall be in accordance with NFPA 101 requirements for Class I interior floor finishes.	Complies via Previous Approval	[redacted]	Shearon Harris FSAR, Shearon Harris FSAR NUREG-1038, Safety Evaluation Report Related to the Operation of the Shearon Harris Nuclear Power Plant, Units 1 and 2 - Docket Nos. STN-50-400 and STN 50-401, Rev. Original, 11/1/1983	Section 9.5.1, page 9.5.1-14 to 9.5.1-14a Section 9.5.1.4

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.3.4 Insulation Materials	3.3.4 Insulation Materials. Thermal insulation materials, radiation shielding materials, ventilation duct materials, and soundproofing materials shall be noncombustible or limited combustible.	Complies via Previous Approval	[redacted]	NLS-86-137, Rev 3 Point by Point Comparison of HNP to Requirements of NUREG 0800, 5/7/1986 Shearon Harris SER, Shearon Harris SER FSAR 9.5.1	Section 9.5.1 Section 9.5.1.4 9.5.1.2.2
3.3.5 Electrical.	N/A	N/A	N/A - General statement; No technical requirements		
3.3.5.1 [Electrical Wiring Above Suspended Ceiling Limitations]	3.3.5.1 Wiring above suspended ceiling shall be kept to a minimum. Where installed, electrical wiring shall be listed for plenum use, routed in armored cable, routed in metallic conduit, or routed in cable trays with solid metal top and bottom covers.	Complies	No Additional Clarification	Shearon Harris FSAR, Shearon Harris FSAR NLS-86-137, Rev 3 Point by Point Comparison of HNP to Requirements of NUREG 0800, 5/7/1986	Section 9.5.1 Section C.5.a(11)

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.3.5.2 [Electrical Raceway Construction Limits]	3.3.5.2 Only metal tray and metal conduits shall be used for electrical raceways. Thin wall metallic tubing shall not be used for power, instrumentation, or control cables. Flexible metallic conduits shall only be used in short lengths to connect components.	Complies with Clarification	Reference FAQ 06-0021.	Shearon Harris FSAR, Shearon Harris FSAR NUREG-1038, Safety Evaluation Report Related to the Operation of the Shearon Harris Nuclear Power Plant, Units 1 and 2 - Docket Nos. STN-50-400 and STN 50-401, Rev. Original, 11/1/1983 FAQ 06-0021, Rev. 001a	Section 9.5.1.2.2 Section 9.5.1.4
3.3.5.3 [Electrical Cable Flame Propagation Limits]	3.3.5.3* Electric cable construction shall comply with a flame propagation test as acceptable to the AHJ. Exception: Existing cable in place prior to the adoption of this standard shall be permitted to remain as is.	Complies with Clarification	Flame propagation testing as defined in FAQ 06-0022.	FAQ 06-0022, AHJ Acceptable Cable Flame Tests NUREG-1038, Safety Evaluation Report Related to the Operation of the Shearon Harris Nuclear Power Plant, Units 1 and 2 - Docket Nos. STN-50-400 and STN 50-401, Rev. Original, 11/1/1983 Shearon Harris FSAR, Shearon Harris FSAR	section 9.5.1, page 9-49 section 9.5.1, page 9.5.1-18
3.3.6 Roofs.	3.3.6 Roofs. Metal roof deck construction shall be designed and installed so the roofing system will not sustain a self-propagating fire on the underside of the deck when the deck is heated by a fire inside the building. Roof coverings shall be Class A as determined by tests described in NFPA 256, Standard Methods of Fire Tests of Roof Coverings.	Complies	No Additional Clarification	NUREG-1038, Safety Evaluation Report Related to the Operation of the Shearon Harris Nuclear Power Plant, Units 1 and 2 - Docket Nos. STN-50-400 and STN 50-401, Rev. Original, 11/1/1983 Shearon Harris FSAR, Shearon Harris FSAR	Pg 9-48 section 9.5.1, page 9.5.1-15

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.3.7 Bulk Flammable Gas Storage.	3.3.7 Bulk Flammable Gas Storage. Bulk compressed or cryogenic flammable gas storage shall not be permitted inside structures housing systems, equipment, or components important to nuclear safety.	Complies via Previous Approval	[redacted]	FSAR 9.5.1 NUREG-1038, Safety Evaluation Report Related to the Operation of the Shearon Harris Nuclear Power Plant, Units 1 and 2 - Docket Nos. STN-50-400 and STN 50-401, Rev. Original, 11/1/1983	Section 9.5.1.2.2 SSER 2

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detai
			[redacted]		

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.3.7.1 [Bulk Flammable Gas Location Requirements]	3.3.7.1 Storage of flammable gas shall be located outdoors, or in separate detached buildings, so that a fire or explosion will not adversely impact systems, equipment, or components important to nuclear safety. NFPA 50A, Standard for Gaseous Hydrogen Systems at Consumer Sites, shall be followed for hydrogen storage.	Complies via Previous Approval	[redacted]	AR 200493, 11/1/2007 AR 206165, 11/19/2007	

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.3.7.2 [Bulk Flammable Gas Container Restrictions]	3.3.7.2 Outdoor high-pressure flammable gas storage containers shall be located so that the long axis is not pointed at buildings.	Complies	No Additional Clarification	NUREG-1038 Supplement 4, Safety Evaluation Report Related to the Operation of the Shearon Harris Nuclear Power Plant, Unit 1 - Docket No. STN-50-400, Rev. SSER 4, 10/1/1986 NLS-86-137, Rev 3 Point by Point Comparison of HNP to Requirements of NUREG 0800, 5/7/1986 Shearon Harris FSAR, Shearon Harris FSAR	C.5.d.(2) Section 9.5.1 page 13
3.3.7.3 [Bulk Flammable Gas Cylinder Limitations]	3.3.7.3 Flammable gas storage cylinders not required for normal operation shall be isolated from the system.	Complies	No Additional Clarification	FPP-008, Control of Fuel Gases and Oxygen, Rev. 008	
3.3.8 Bulk Storage of Flammable and Combustible Liquids.	3.3.8 Bulk Storage of Flammable and Combustible Liquids. Bulk storage of flammable and combustible liquids shall not be permitted inside structures containing systems, equipment, or components important to nuclear safety. As a minimum, storage and use shall comply with NFPA 30, Flammable and Combustible Liquids Code.	Complies with Clarification	[redacted]	LAP-83-306 HNP-M/BMRK-0014, Code Compliance Evaluation NFPA 30, Flammable and Combustible Liquids Code, Rev. 0	page 266 SER open item 109

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.3.9 Transformers.	3.3.9* Transformers. Where provided, transformer oil collection basins and drain paths shall be periodically inspected to ensure that they are free of debris and capable of performing their design function.	Complies	No Additional Clarification	EC 48017, Xmer pit sizing, 9/8/2006 OMM-016, Operators Rounds, Rev. 062	Section 5.3.10
3.3.10 Hot Pipes and Surfaces.	3.3.10* Hot Pipes and Surfaces. 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.	Complies	No additional clarification	FPP-004, Transient Combustible Control, Rev. 019	
3.3.11 Electrical Equipment	3.3.11 Electrical Equipment Adequate clearance, free of combustible material, shall be maintained around energized electrical equipment.	Complies	FAQ 06-0024 Rev 0	FPP-004, Transient Combustible Control, Rev. 019	

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.3.12 Reactor Coolant Pumps.	3.3.12* Reactor Coolant Pumps. For facilities with non-inerted containments, reactor coolant pumps with an external lubrication system shall be provided with an oil collection system. The oil collection system shall be designed and installed such that leakage from the oil system is safely contained for off normal conditions such as accident conditions or earthquakes. All of the following shall apply. (1) The oil collection system for each reactor coolant pump shall be capable of collecting lubricating oil from all potential pressurized and nonpressurized leakage sites in each reactor coolant pump oil system. (2) Leakage shall be collected and drained to a vented closed container that can hold the inventory of the reactor coolant pump lubricating oil system. (3) A flame arrestor is required in the vent if the flash point characteristics of the oil present the hazard of a fire flashback. (4) Leakage points on a reactor coolant pump motor to be protected shall include but not be limited to the lift pump and piping, overflow lines, oil cooler, oil fill and drain lines and plugs, flanged connections on oil lines, and the oil reservoirs, where such features exist on the reactor coolant pumps. (5) The collection basin drain line to the collection tank shall be large enough to accommodate the largest potential oil leak such that oil leakage does not overflow the basin.	Complies Via Previous Approval	[redacted]	Shearon Harris FSAR, Shearon Harris FSAR 1364-053480, RCP-GEN ASSY OIL SPILL PROTECTION SYS, Rev. 001 2165-S-0685, SFD - CONTM'T, TURBINE BLDG & TANK AREA & SEC. BLD, Rev. 027 LER 97-10 NUREG-1038, Safety Evaluation Report Related to the Operation of the Shearon Harris Nuclear Power Plant, Units 1 and 2 - Docket Nos. STN-50-400 and STN 50-401, Rev. Original, 11/1/1983 NLS-86-137, Rev 3 Point by Point Comparison of HNP to Requirements of NUREG 0800, 5/7/1986	Section 9.5.1 sh 1-7

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NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
			[redacted]		
3.4 Industrial Fire Brigade.	N/A	N/A	N/A - General statement; No technical requirements		

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.4.1 On-Site Fire-Fighting Capability.	3.4.1 On-Site Fire-Fighting Capability. All of the following requirements shall apply. (a) A fully staffed, trained, and equipped fire-fighting force shall be available at all times to control and extinguish all fires on site. This force shall have a minimum complement of five persons on duty and shall conform with the following NFPA standards as applicable: (1) NFPA 600, Standard on Industrial Fire Brigades (interior structural fire fighting) (2) NFPA 1500, Standard on Fire Department Occupational Safety and Health Program (3) NFPA 1582, Standard on Medical Requirements for Fire Fighters and Information for Fire Department Physicians (b) * Industrial fire brigade members shall have no other assigned normal plant duties that would prevent immediate response to a fire or other emergency as required. (c) During every shift, the brigade leader and at least two brigade members shall have sufficient training and knowledge of nuclear safety systems to understand the effects of fire and fire suppressants on nuclear safety performance Exception: Sufficient training and knowledge shall be permitted to be provided by an operations advisor dedicated to industrial fire brigade support criteria. (d) * The industrial fire brigade shall be notified immediately upon verification of a fire. (e) Each industrial fire brigade member shall pass an annual physical examination to determine that he or she can perform the strenuous activity required during manual fire-fighting operations. The physical examination shall determine the ability of each member to use respiratory protection equipment.	Complies with Clarification	NFPA 1500 and NFPA 1582 are not applicable to HNP as defined within their respective scope statements.	HNP-M/BMRK-0012, Code Compliance Evaluation NFPA 600 , Standards on Industrial Fire Brigades, Rev. 0, 3/27/2008 QCC FP FBBCERTH, INITIAL FIRE BRIGADE MEMBER CERTIFICATION CARD FBBCERTH, Rev. 006 FAQ 06-0007, Rev. 003 FPP-001, Fire Protection Program Manual, Rev. 029 FPP-002, Fire Emergency, Rev. 031 Shearon Harris FSAR, Shearon Harris FSAR	Section 4.3.3 section 8.1.7 pg 9.5.1-57

Table B-1 - NFPA 805 Ch. 3 Transition

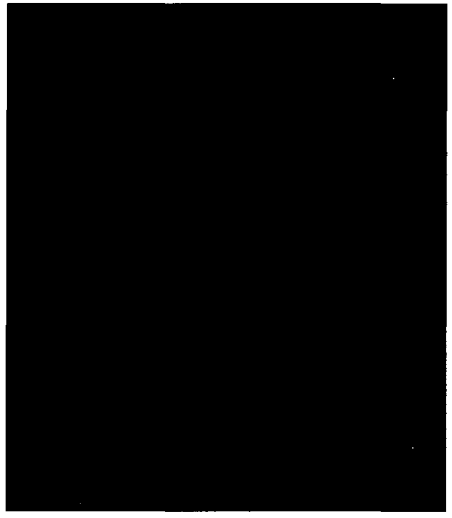
NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.4.2 Pre-Fire Plans.	3.4.2* Pre-Fire Plans. Current and detailed pre-fire plans shall be available to the industrial fire brigade for all areas in which a fire could jeopardize the ability to meet the performance criteria described in Section 1.5.	Complies with Clarification		FPP-001, Fire Protection Program Manual, Rev. 029 NLS-86-137, Rev 3 Point by Point Comparison of HNP to Requirements of NUREG 0800, 5/7/1986	Section 8.6.3-Fire Pre-Plans

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.4.2.1 [Pre-Fire Plan Contents]	3.4.2.1* The plans shall detail the fire area configuration and fire hazards to be encountered in the fire area, along with any nuclear safety components and fire protection systems and features that are present.	Complies with Clarification	[redacted]	FPP-001, Fire Protection Program Manual, Rev. 029 FPP-002, Fire Emergency, Rev. 031 FAQ 06-0025, Approved Fire Pre-plan Scope / Content	Section 8.6.3-Fire Protection Plans

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
			[redacted]		
3.4.2.2 [Pre-Fire Plan Updates]	3.4.2.2 Pre-fire plans shall be reviewed and updated as necessary.	Complies	No Additional Clarification	FPP-001, Fire Protection Program Manual, Rev. 029 FP-002, Fire Emergency PRO-NGGC-0204, Procedure Review and Approval, Rev. 009	Section 8.6.3-Fire Pre-Plans
3.4.2.3 [Pre-Fire Plan Locations]	3.4.2.3* Pre-fire plans shall be available in the control room and made available to the plant industrial fire brigade.	Complies	No Additional Clarification	FPP-001, Fire Protection Program Manual, Rev. 029	Section 8.6.3
3.4.2.4 [Pre-Fire Plan Coordination Needs]	3.4.2.4* Pre-fire plans shall address coordination with other plant groups during fire emergencies.	Complies with Clarification	[redacted]	FPP-002, Fire Emergency, Rev. 031 FPP-001, Fire Protection Program Manual, Rev. 029	Section 8.6.5-Fire Response

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.4.3 Training and Drills.	3.4.3 Training and Drills. Industrial fire brigade members and other plant personnel who would respond to a fire in conjunction with the brigade shall be provided with training commensurate with their emergency responsibilities. (a) Plant Industrial Fire Brigade Training. All of the following requirements shall apply. (1) Plant industrial fire brigade members shall receive training consistent with the requirements contained in NFPA 600, Standard on Industrial Fire Brigades, or NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, as appropriate. (2) Industrial fire brigade members shall be given quarterly training and practice in fire fighting, including radioactivity and health physics considerations, to ensure that each member is thoroughly familiar with the steps to be taken in the event of a fire. (3) A written program shall detail the industrial fire brigade training program. (4) Written records that include but are not limited to initial industrial fire brigade classroom and hands-on training, refresher training, special training schools attended, drill attendance records, and leadership training for industrial fire brigades shall be maintained for each industrial fire brigade member. (b) Training for Non-Industrial Fire Brigade Personnel. Plant personnel who respond with the industrial fire brigade shall be trained as to their responsibilities, potential hazards to be encountered, and interfacing with the industrial fire brigade. (c) * Drills. All of the following requirements shall apply. (1) Drills shall be conducted quarterly for each shift to test the response capability of the industrial fire brigade. (2) Industrial fire brigade drills shall be developed to test and challenge industrial fire brigade response, including brigade performance as a team, proper use of equipment, effective use of pre-fire plans, and coordination with other groups. These drills shall evaluate the industrial fire brigade's abilities to react, respond, and demonstrate proper fire-fighting techniques to control and extinguish the fire and smoke conditions being simulated by the drill scenario. (3) Industrial fire brigade drills shall be conducted in various plant areas, especially in those areas identified to be essential to plant operation and to contain significant fire hazards. (4) Drill records shall be maintained detailing the drill scenario, industrial fire brigade member response, and	a) Complies with NFPA 600	No Further Clarification.	TPP-219, Emergency Services Training Program, Rev. 011 HNP-M/BMRK-0012, Code Compliance Evaluation NFPA 600 , Standards on Industrial Fire Brigades, Rev. 0, 3/27/2008	FAQ 06-0007, Rev. 003

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NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
	ability of the industrial fire brigade to perform as a team. (5) A critique shall be held and documented after each drill.				
		b) Complies	No Additional Clarification	EGR-NGGC-0007, Fire Brigade Program, Rev. 0 HNP-M/BMRK-0012, Code Compliance Evaluation NFPA 600 , Standards on Industrial Fire Brigades, Rev. 0, 3/27/2008	
		c) Complies	No Additional Clarification	HNP-M/BMRK-0012, Code Compliance Evaluation NFPA 600 , Standards on Industrial Fire Brigades, Rev. 0, 3/27/2008 TPP-219, Emergency Services Training Program, Rev. 011	
3.4.4 Fire-Fighting Equipment.	3.4.4 Fire-Fighting Equipment. Protective clothing, respiratory protective equipment, radiation monitoring equipment, personal dosimeters, and fire suppression equipment such as hoses, nozzles, fire extinguishers, and other needed equipment shall be provided for the industrial fire brigade. This equipment shall conform with the applicable NFPA standards.	Complies with Clarification	[redacted]	HPP-630, Respiratory Protection Program, Rev. 020 Shearon Harris FSAR, Shearon Harris FSAR	Section 9.5.1, page 9.5.1-25 & 26
3.4.5 Off-Site Fire Department Interface.	N/A	N/A	N/A - General statement; No technical requirements		
3.4.5.1 Mutual Aid Agreement.	3.4.5.1 Mutual Aid Agreement. Off-site fire authorities shall be offered a plan for their interface during fires and related emergencies on site.	Complies	No Additional Clarification	FPP-001, Fire Protection Program Manual, Rev. 029 TPP-219, Emergency Services Training Program, Rev. 011	
3.4.5.2 Site-Specific Training.	3.4.5.2* Site-Specific Training. Fire fighters from the off-site fire authorities who are expected to respond to a fire at the plant shall be offered site-specific training and shall be invited to participate in a drill at least annually.	Complies	No Additional Clarification	TPP-219, Emergency Services Training Program, Rev. 011 FPP-001, Fire Protection Program Manual, Rev. 029	

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NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.4.5.3 Security and Radiation Protection.	3.4.5.3* Security and Radiation Protection. Plant security and radiation protection plans shall address off-site fire authority response.	Complies	No Additional Clarification	PLP-201, Emergency Plan, Rev. 052 HNP Physical Security and Safeguards Contingency Plan (SGI) SP-015, Emergency Plan Support, Rev. 016	Section 4.7
3.4.6 Communications.	3.4.6* Communications. An effective emergency communications capability shall be provided for the industrial fire brigade.	Complies	No Further Clarification	FPP-001, Fire Protection Program Manual, Rev. 029 FSAR Section 9.5.2, Communication System	8.5.4.c / 8.6.1
3.5 Water Supply	N/A	N/A	N/A - General statement; No technical requirements		
3.5.1 [Water Supply Flow Code Requirements]	3.5.1 A fire protection water supply of adequate reliability, quantity, and duration shall be provided by one of the two following methods. (a) Provide a fire protection water supply of not less than two separate 300,000-gal (1,135,500-L) supplies. (b) Calculate the fire flow rate for 2 hours. This fire flow rate shall be based on 500 gpm (1892.5 L/min) for manual hose streams plus the largest design demand of any sprinkler or fixed water spray system(s) in the power block as determined in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems, or NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection. The fire water supply shall be capable of delivering this design demand with the hydraulically least demanding portion of fire main loop out of service.	Complies Via Previous Approval	[redacted]	Shearon Harris SER, Shearon Harris SER Shearon Harris FSAR Amendment 53	Pg 9-51 section 9.5.1, page 9.5.1-20

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NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.5.2 [Water Supply Tank Code Requirements]	3.5.2* The tanks shall be interconnected such that fire pumps can take suction from either or both. A failure in one tank or its piping shall not allow both tanks to drain. The tanks shall be designed in accordance with NFPA 22, Standard for Water Tanks for Private Fire Protection. Exception No. 1: Water storage tanks shall not be required when fire pumps are able to take suction from a large body of water (such as a lake), provided each fire pump has its own suction and both suctions and pumps are adequately separated. Exception No. 2: Cooling tower basins shall be an acceptable water source for fire pumps when the volume is sufficient for both purposes and water quality is consistent with the demands of the fire service.	Complies with Clarification	[redacted]	Shearon Harris FSAR Amendment 53 NUREG 1083, NUREG 1083 Shearon Harris FSAR, Shearon Harris FSAR	section 9.5.1, page 9.5.1-21 sec 9.5.1, pg 9-21
3.5.3 [Water Supply Pump Code Requirements]	3.5.3* Fire pumps, designed and installed in accordance with NFPA 20, Standard for the Installation of Stationary Pumps for Fire Protection, shall be provided to ensure that 100 percent of the required flow rate and pressure are available assuming failure of the largest pump or pump power source.	Complies	Compliance with NFPA 20-1972 is as identified within calculation HNP-M/BMRK-0007.	Shearon Harris FSAR Amendment 53 FAQ 06-0008, NFPA Code Evaluations HNP-M/BMRK-0007, Code Compliance Evaluation NFPA 20 - Centrifugal Fire Pumps, Rev. 001	section 9.5.1, page 9.5.1-21
3.5.4 [Water Supply Pump Diversity and Redundancy]	3.5.4 At least one diesel engine-driven fire pump or two more seismic Category I Class IE electric motor-driven fire pumps connected to redundant Class IE emergency power buses capable of providing 100 percent of the required flow rate and pressure shall be provided.	Complies	No Additional Clarification	Shearon Harris FSAR Amendment 53	section 9.5.1, page 9.5.1-21

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.5.5 [Water Supply Pump Separation Requirements]	3.5.5 Each pump and its driver and controls shall be separated from the remaining fire pumps and from the rest of the plant by rated fire barriers.	Complies via Previous Approval	[redacted]	Shearon Harris FSAR Amendment 53 NUREG 1083, NUREG 1083	section 9.5.1, page 9.5.1-21
3.5.6 [Water Supply Pump Start/Stop Requirements]	3.5.6 Fire pumps shall be provided with automatic start and manual stop only.	Complies	No Additional Clarification	Shearon Harris FSAR Amendment 53	section 9.5.1, page 9.5.1-22
3.5.7 [Water Supply Pump Connection Requirements]	3.5.7 Individual fire pump connections to the yard fire main loop shall be provided and separated with sectionalizing valves between connections.	Complies	No Additional Clarification	2165-S-0555, Rev. 18 Shearon Harris FSAR Amendment 53 2165-S-0557, Rev. 7 2165-S-0556, Rev. 13	section 9.5.1. page 9.5.1-21A
3.5.8 [Water Supply Pressure Maintenance Limitations]	3.5.8 A method of automatic pressure maintenance of the fire protection water system shall be provided independent of the fire pumps.	Complies	No Additional Clarification	NUREG 1083, NUREG 1083 Shearon Harris FSAR Amendment 53 Shearon Harris SER, Shearon Harris SER	section 9.5.1, page 9.5.1-22 sec 9.5.1, pg 9.5.1-22
3.5.9 [Water Supply Pump Operation Notification]	3.5.9 Means shall be provided to immediately notify the control room, or other suitable constantly attended location, of operation of fire pumps.	Complies	No Additional Clarification	Shearon Harris FSAR Amendment 53	section 9.5.1, page 9.5.1-21A

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NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.5.10 [Water Supply Yard Main Code Requirements]	3.5.10 An underground yard fire main loop, designed and installed in accordance with NFPA 24, Standard for the Installation of Private Fire Service Mains and Their Appurtenances, shall be installed to furnish anticipated water requirements.	Complies	HNP complies with NFPA 24-1977 as described in HNP-M/BMRK-0008.	Shearon Harris FSAR Amendment 53 HNP-M/BMRK-0008, Code Compliance Evaluation NFPA 24 - Standard for Outside Protection, Rev. 001 FAQ 06-0008, NFPA Code Evaluations	section 9.5.1, page 9.5.1-22

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NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.5.11 [Water Supply Yard Main Maintenance Issues]	3.5.11 Means shall be provided to isolate portions of the yard fire main loop for maintenance or repair without simultaneously shutting off the supply to both fixed fire suppression systems and fire hose stations provided for manual backup. Sprinkler systems and manual hose station standpipes shall be connected to the plant fire protection water main so that a single active failure or a crack to the water supply piping to these systems can be isolated so as not to impair both the primary and backup fire suppression systems.	Complies via Previous Approval	[redacted]	Shearon Harris FSAR Amendment 53 Shearon Harris SER, Shearon Harris SER	Section 9.5.1, page 9.5.1-23 pg 9.5.1-51 and 52

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NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.5.12 [Water Supply Compatible Thread Connections]	3.5.12 Threads compatible with those used by local fire departments shall be provided on all hydrants, hose couplings, and standpipe risers. Exception: Fire departments shall be permitted to be provided with adapters that allow interconnection between plant equipment and the fire department equipment if adequate training and procedures are provided.	Complies	[redacted]	Shearon Harris FSAR Amendment 53	section 9.5.1, page 9.5.1-23
3.5.13 [Water Supply Header Options]	3.5.13 Headers fed from each end shall be permitted inside buildings to supply both sprinkler and standpipe systems, provided steel piping and fittings meeting the requirements of ANSI B31.1, Code for Power Piping, are used for the headers (up to and including the first valve) supplying the sprinkler systems where such headers are part of the seismically analyzed hose standpipe system. Where provided, such headers shall be considered an extension of the yard main system. Each sprinkler and standpipe system shall be equipped with an outside screw and yoke (OS&Y) gate valve or other approved shutoff valve.	Complies with Clarification		Shearon Harris FSAR Amendment 53	section 9.5.1, page 9.5.1-23
3.5.14 [Water Supply Control Valve Supervision]	3.5.14* All fire protection water supply and fire suppression system control valves shall be under a periodic inspection program and shall be supervised by one of the following methods. (a) Electrical supervision with audible and visual signals in the main control room or other suitable constantly attended location. (b) Locking valves in their normal position. Keys shall be made available only to authorized personnel. (c) Sealing valves in their normal positions. This option shall be utilized only where valves are located within fenced areas or under the direct control of the owner/operator.	Complies via Previous Approval		FPT-3002, Fire Main Valve Position Verification, Quarterly Interval, Modes: All, Rev. 018 FPP-001, Fire Protection Program Manual, Rev. 029 NUREG-1038 Supplement 3, Safety Evaluation Report Related to the Operation of the Shearon Harris Nuclear Power Plant, Unit 1 - Docket No. STN-50-400, Rev. SSER 3, 5/1/1986 Shearon Harris FSAR Amendment 53	All 9.5.1 section 9.5.1, page 9.5.1-23

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NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.5.15 [Water Supply Hydrant Code Requirements]	3.5.15 Hydrants shall be installed approximately every 250 ft (76 m) apart on the yard main system. A hose house equipped with hose and combination nozzle and other auxiliary equipment specified in NFPA 24, Standard for the Installation of Private Fire Service Mains and Their Appurtenances, shall be provided at intervals of not more than 1000 ft (305 m) along the yard main system. Exception: Mobile means of providing hose and associated equipment, such as hose carts or trucks, shall be permitted in lieu of hose houses. Where provided, such mobile equipment shall be equivalent to the equipment supplied by three hose houses.	Complies via Previous Approval	[redacted]	Shearon Harris FSAR Amendment 53 NUREG-1038 Supplement 4, Safety Evaluation Report Related to the Operation of the Shearon Harris Nuclear Power Plant, Unit 1 - Docket No. STN-50-400, Rev. SSER 4, 10/1/1986	section 9.5.1, page 9.5.1-23
3.5.16 [Water Supply Dedicated Limits]	3.5.16* The fire protection water supply system shall be dedicated for fire protection use only. Exception No. 1: Fire protection water supply systems shall be permitted to be used to provide backup to nuclear safety systems, provided the fire protection water supply systems are designed and maintained to deliver the combined fire and nuclear safety flow demands for the duration specified by the applicable analysis. Exception No. 2: Fire protection water storage can be provided by plant systems serving other functions, provided the storage has a dedicated capacity capable of providing the maximum fire protection demand for the specified duration as determined in this section.	License Amendment Required	[redacted]	Shearon Harris FSAR Amendment 53 SD-149, Fire Protection System, Rev. 017	section 9.5.1, page 9.5.1-20 section 5.2
3.6 Standpipe and Hose Stations.	N/A	N/A	N/A - General statement; No technical requirements		

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NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.6.1 [Standpipe and Hose Station Code Requirements]	3.6.1 For all power block buildings, Class III standpipe and hose systems shall be installed in accordance with NFPA 14, Standard for the Installation of Standpipe, Private Hydrant, and Hose Systems.	Complies Via Previous Approval	[redacted]	NUREG-1038 Supplement 4, Safety Evaluation Report Related to the Operation of the Shearon Harris Nuclear Power Plant, Unit 1 - Docket No. STN-50-400, Rev. SSER 4, 10/1/1986 NUREG-1038 Supplement 1, Safety Evaluation Report Related to the Operation of the Shearon Harris Nuclear Power Plant, Unit 1 - Docket No. STN-50-400, Rev. SSER 1, 6/1/1984 NLS-86-137, Rev 3 Point by Point Comparison of HNP to Requirements of NUREG 0800, 5/7/1986 HNP-M/BMRK-0006, Code Compliance Evaluation NFPA 14-1976, Standpipe and Hose Stations, Rev. 001 SHNPP FSAR 9.5.1	section 9.5.1 section 9.5.1 Section 9.5.1

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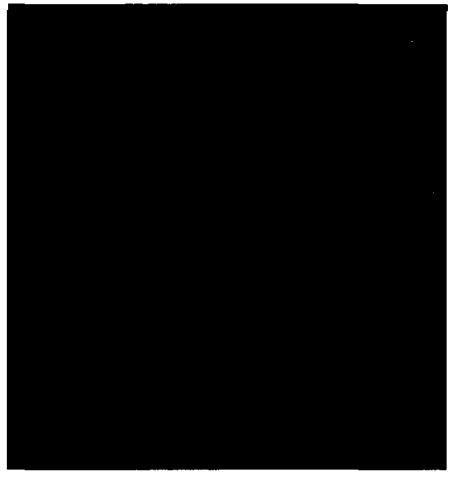
NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
					
3.6.2 [Standpipe and Hose Station Capability Limitations]	3.6.2 A capability shall be provided to ensure an adequate water flow rate and nozzle pressure for all hose stations. This capability includes the provision of hose station pressure reducers where necessary for the safety of plant industrial fire brigade members and off-site fire department personnel.	Complies	No Additional Clarification	NLS-86-137, Rev 3 Point by Point Comparison of HNP to Requirements of NUREG 0800, 5/7/1986 HNP SER initial and Supplement 4 SHNPP FSAR 9.5.1 AR 25032, Evaluation of NFPA 14 Deviations, 4/15/2002 HNP-M/BMRK-0006, Code Compliance Evaluation NFPA 14-1976, Standpipe and Hose Stations, Rev. 001 AR 76621, Evaluate Electrical Nozzles, 11/12/2003	

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NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.6.3 [Standpipe and Hose Station Nozzle Restrictions]	3.6.3 The proper type of hose nozzle to be supplied to each power block area shall be based on the area fire hazards. The usual combination spray/straight stream nozzle shall not be used in areas where the straight stream can cause unacceptable damage or present an electrical hazard to fire-fighting personnel. Listed electrically safe fixed fog nozzles shall be provided at locations where high-voltage shock hazards exist. All hose nozzles shall have shutoff capability and be able to control water flow from full open to full closed.	Complies	No Additional Clarification	NFPA 14-1976, Standpipes and Hose Stations NLS-86-137, Rev 3 Point by Point Comparison of HNP to Requirements of NUREG 0800, 5/7/1986 HNP SER initial and Supplement 4 Shearon Harris FSAR, Shearon Harris FSAR AR 76621, Evaluate Electrical Nozzles, 11/12/2003 AR 25032, Evaluation of NFPA 14 Deviations, 4/15/2002	Section 9.5.1

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NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.6.4 [Standpipe and Hose Station Earthquake Provisions]	3.6.4 Provisions shall be made to supply water at least to standpipes and hose stations for manual fire suppression in all areas containing systems and components needed to perform the nuclear safety functions in the event of a safe shutdown earthquake (SSE). Exception: For existing plants that are not capable of meeting this requirement, provisions to restore a water supply and distribution system for manual fire-fighting purposes shall be made. This provisional manual fire-fighting standpipe/hose station system shall be capable of providing manual fire-fighting protection to the various plant locations important to supporting and maintaining the nuclear safety function. The provisions for establishing this provisional system shall be preplanned and be capable of being implemented in a timely manner following an SSE.	Complies via Previous Approval	[redacted]	Shearon Harris FSAR, Shearon Harris FSAR NLS-86-137, Rev 3 Point by Point Comparison of HNP to Requirements of NUREG 0800, 5/7/1986 HNP-M/BMRK-0006, Code Compliance Evaluation NFPA 14-1976, Standpipe and Hose Stations, Rev. 001 HNP SER initial and Supplement 4	Section 9.5.1

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NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
			[redacted]		

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
[redacted]					

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NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.6.5 [Standpipe and Hose Station Seismic Connection Limitations]	3.6.5 Where the seismic required hose stations are cross-connected to essential seismic non-fire protection water supply systems, the fire flow shall not degrade the essential water system requirement.	License Amendment Required	[redacted]	HNP SER initial and Supplement 4 OP-139, Service Water System, Rev. 066 HNP-M/BMRK-0006, Code Compliance Evaluation NFPA 14-1976, Standpipe and Hose Stations, Rev. 001 SW-0087, ESW Supply to AFW Pumps, Air Compressors and Fire Protection, Rev. 001 NLS-86-137, Rev 3 Point by Point Comparison of HNP to Requirements of NUREG 0800, 5/7/1986 Shearon Harris FSAR, Shearon Harris FSAR	P&L 4.0.24 Section 9.5.1
3.7 Fire Extinguishers.	3.7 Fire Extinguishers. Where provided, fire extinguishers of the appropriate number, size, and type shall be provided in accordance with NFPA 10, Standard for Portable Fire Extinguishers. Extinguishers shall be permitted to be positioned outside of fire areas due to radiological conditions.	Complies with Clarification	[redacted]	2166-S-2120 to 2127, WPB Fire Hazards Analysis Drawings, Rev. latest 2166-S-2112-2116 , FHB Fire Hazards Drawings, Rev. latest Reg Evaluation 01-0682 , Conformance with NFPA 10, Rev. 0, 4/26/2001 2166-S-2135, ESWISS Fire Hazards Analysis Drawing, Rev. latest HNP-M/BMRK-0005, CODE COMPLIANCE EVALUATION NFPA 10, PORTABLE FIRE EXTINGUISHERS, Rev. 001 2166-S-2129-2133 (TB), TB Fire Hazards Analysis Drawings, Rev. latest	

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NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.8 Fire Alarm and Detection Systems.	N/A	N/A	N/A - General statement; No technical requirements		
3.8.1 Fire Alarm.	3.8.1 Fire Alarm. Alarm initiating devices shall be installed in accordance with NFPA 72, National Fire Alarm Code®. Alarm annunciation shall allow the proprietary alarm system to transmit fire-related alarms, supervisory signals, and trouble signals to the control room or other constantly attended location from which required notifications and response can be initiated. Personnel assigned to the proprietary alarm station shall be permitted to have other duties. The following fire-related signals shall be transmitted: (1) Actuation of any fire detection device (2) Actuation of any fixed fire suppression system (3) Actuation of any manual fire alarm station (4) Starting of any fire pump (5) Actuation of any fire protection supervisory device (6) Indication of alarm system trouble condition	Complies	[redacted]	FSAR 9.5.1 HNP-M/BMRK-0001, CODE COMPLIANCE EVALUATION NFPA 72E, AUTOMATIC FIRE DETECTORS, Rev. 001 HNP-M/BMRK-0002, CODE COMPLIANCE EVALUATION NFPA 72D, PROPRIETARY PPROTECTIVE SIGNALING SYSTEM, Rev. 001	
3.8.1.1 [Fire Alarm Communication Requirements]	3.8.1.1 Means shall be provided to allow a person observing a fire at any location in the plant to quickly and reliably communicate to the control room or other suitable constantly attended location.	Complies	No Additional Clarification	FPP-002, Fire Emergency, Rev. 031	Section 8.6.1 page 13
3.8.1.2 [Fire Alarm Prompt Notification Limits]	3.8.1.2 Means shall be provided to promptly notify the following of any fire emergency in such a way as to allow them to determine an appropriate course of action: (1) General site population in all occupied areas (2) Members of the industrial fire brigade and other groups supporting fire emergency response (3) Off-site fire emergency response agencies. Two independent means shall be available (e.g., telephone and radio) for notification of off-site emergency services	Complies	No Additional Clarification	FPP-002, Fire Emergency, Rev. 031	Section 8.6.1 page 13

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NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.8.2 Detection.	3.8.2 Detection. If automatic fire detection is required to meet the performance or deterministic requirements of Chapter 4, then these devices shall be installed in accordance with NFPA 72, National Fire Alarm Code, and its applicable appendixes.	Complies	[redacted]	FSAR 9.5.1 HNP-M/BMRK-0001, CODE COMPLIANCE EVALUATION NFPA 72E, AUTOMATIC FIRE DETECTORS, Rev. 001 HNP-M/BMRK-0002, CODE COMPLIANCE EVALUATION NFPA 72D, PROPRIETARY PPROTECTIVE SIGNALING SYSTEM, Rev. 001	
3.9 Automatic and Manual Water-Based Fire Suppression Systems.	N/A	N/A	N/A - General statement; No technical requirements		
3.9.1 [Fire Suppression System Code Requirements]	3.9.1* If an automatic or manual water-based fire suppression system is required to meet the performance or deterministic requirements of Chapter 4, then the system shall be installed in accordance with the appropriate NFPA standards including the following: (1) NFPA 13, Standard for the Installation of Sprinkler Systems (2) NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection (3) NFPA 750, Standard on Water Mist Fire Protection Systems (4) NFPA 16, Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems	Complies with Clarification	[redacted]	DBD-317, WATER BASED SUPPRESSION SYSTEMS, Rev. 04, 8/25/2004 HNP-M/BMRK-0009, Code Compliance Evaluation NFPA 13, Sprinkler Systems, Rev. 001, 12/13/2004	
3.9.2 [Fire Suppression System Flow Alarm]	3.9.2 Each system shall be equipped with a water flow alarm.	Complies	No Additional Clarification	SHNPP FSAR 9.5.1 Amendment 48	Section 9.5.1, page 9.5.1-23
3.9.3 [Fire Suppression System Alarm Locations]	3.9.3 All alarms from fire suppression systems shall annunciate in the control room or other suitable constantly attended location.	Complies	No Clarification Required	SHNPP FSAR 9.5.1 Amendment 48	Section 9.5.1, page 9.5.1-25

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.9.4 [Fire Suppression System Diesel Pump Sprinkler Protection]	3.9.4 Diesel-driven fire pumps shall be protected by automatic sprinklers.	Complies via Previous Approval	[redacted]	NUREG-1038, Safety Evaluation Report Related to the Operation of the Shearon Harris Nuclear Power Plant, Units 1 and 2 - Docket Nos. STN-50-400 and STN 50-401, Rev. Original, 11/1/1983 SHNPP FSAR 9.5.1	9-51
3.9.5 [Fire Suppression System Shutoff Controls]	3.9.5 Each system shall be equipped with an OS&Y gate valve or other approved shutoff valve.	Complies	No Additional Clarification	Shearon Harris FSAR, Shearon Harris FSAR	Section 9.5.1, page 9.5.1-23
3.9.6 [Fire Suppression System Valve Supervision]	3.9.6 All valves controlling water-based fire suppression systems required to meet the performance or deterministic requirements of Chapter 4 shall be supervised as described in 3.5.14.	Complies via Previous Approval	[redacted]	NUREG-1038 Supplement 3, Safety Evaluation Report Related to the Operation of the Shearon Harris Nuclear Power Plant, Unit 1 - Docket No. STN-50-400, Rev. SSER 3, 5/1/1986 Shearon Harris FSAR Amendment 53 OP-149, Fire Protection, Rev. 037	section 9.5.1, page 9.5.1-23
3.10 Gaseous Fire Suppression Systems.	N/A	N/A	N/A - General statement; No technical *requirements*		

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.10.1 [Gaseous Suppression System Code Requirements]	3.10.1 If an automatic total flooding and local application gaseous fire suppression system is required to meet the performance or deterministic requirements of Chapter 4, then the system shall be designed and installed in accordance with the following applicable NFPA codes: (1) NFPA 12, Standard on Carbon Dioxide Extinguishing Systems (2) NFPA 12A, Standard on Halon 1301 Fire Extinguishing Systems (3) NFPA 2001, Standard on Clean Agent Fire Extinguishing Systems	N/A	Gaseous suppression not used at HNP.		
3.10.2 [Gaseous Suppression System Alarm Location]	3.10.2 Operation of gaseous fire suppression systems shall annunciate and alarm in the control room or other constantly attended location identified.	N/A	Gaseous suppression not used at HNP.		
3.10.3 [Gaseous Suppression System Ventilation Limitations]	3.10.3 Ventilation system design shall take into account prevention from over-pressurization during agent injection, adequate sealing to prevent loss of agent, and confinement of radioactive contaminants.	N/A	Gaseous suppression not used at HNP.		
3.10.4 [Gaseous Suppression System Single Failure Limits]	3.10.4* In any area required to be protected by both primary and backup gaseous fire suppression systems, a single active failure or a crack in any pipe in the fire suppression system shall not impair both the primary and backup fire suppression capability.	N/A	Gaseous suppression not used at HNP.		
3.10.5 [Gaseous Suppression System Disarming Controls]	3.10.5 Provisions for locally disarming automatic gaseous suppression systems shall be secured and under strict administrative control.	N/A	Gaseous suppression not used at HNP.		
3.10.6 [Gaseous Suppression System CO2 Limitations]	3.10.6* Total flooding carbon dioxide systems shall not be used in normally occupied areas.	N/A	Gaseous suppression not used at HNP.		
3.10.7 [Gaseous Suppression System CO2 Warnings]	3.10.7 Automatic total flooding carbon dioxide systems shall be equipped with an audible pre-discharge alarm and discharge delay sufficient to permit egress of personnel. The carbon dioxide system shall be provided with an odorizer.	N/A	Gaseous suppression not used at HNP.		

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.10.8 [Gaseous Suppression System CO2 Required Disarming]	3.10.8 Positive mechanical means shall be provided to lock out total flooding carbon dioxide systems during work in the protected space.	N/A	Gaseous suppression not used at HNP.		
3.10.9 [Gaseous Suppression System Cooling Considerations]	3.10.9 The possibility of secondary thermal shock (cooling) damage shall be considered during the design of any gaseous fire suppression system, but particularly with carbon dioxide.	N/A	Gaseous suppression not used at HNP.		
3.10.10 [Gaseous Suppression System Decomposition Issues]	3.10.10 Particular attention shall be given to corrosive characteristics of agent decomposition products on safety systems.	N/A	Gaseous suppression not used at HNP.		
3.11 Passive Fire Protection Features	3.11 Passive Fire Protection Features. This section shall be used to determine the design and installation requirements for passive protection features. Passive fire protection features include wall, ceiling, and floor assemblies, fire doors, fire dampers, and through fire barrier penetration seals. Passive fire protection features also include electrical raceway fire barrier systems (ERFBS) that are provided to protect cables and electrical components and equipment from the effects of fire.	N/A	N/A - General statement; No technical requirements		
3.11.1 Building Separation.	3.11.1 Building Separation. Each major building within the power block shall be separated from the others by barriers having a designated fire resistance rating of 3 hours or by open space of at least 50 ft (15.2 m) or space that meets the requirements of NFPA 80A, Recommended Practice for Protection of Buildings from Exterior Fire Exposures. Exception: Where a performance-based analysis determines the adequacy of building separation, the requirements of 3.11.1 shall not apply.	Complies	No Additional Clarification	2165-G-0002, PLOT PLAN, Rev. 023 E-5525, Safe Shutdown Analysis in Case of Fire, Rev. 015 2165-G-0003, SITE PLAN, Rev. 018 FSAR 9.5.1	
3.11.2 Fire Barriers.	3.11.2 Fire Barriers. Fire barriers required by Chapter 4 shall include a specific fire-resistance rating. Fire barriers shall be designed and installed to meet the specific fire resistance rating using assemblies qualified by fire tests. The qualification fire tests shall be in accordance with NFPA 251, Standard Methods of Tests of Fire Endurance of Building Construction and Materials, or ASTM E 119, Standard Test Methods for Fire Tests of Building Construction and Materials.	Complies	No Additional Clarification	LAP-83-479, Point by Point Comparison of HNP with NUREG-0800 NUREG-1038, Safety Evaluation Report Related to the Operation of the Shearon Harris Nuclear Power Plant, Units 1 and 2 - Docket Nos. STN-50-400 and STN 50-401, Rev. Original, 11/1/1983	Conformance Sec. C.5a(6), pg 43 Section 9.5.1.4, pg 9-47 & 48

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.11.3 Fire Barrier Penetrations.	3.11.3* Fire Barrier Penetrations. Penetrations in fire barriers shall be provided with listed fire-rated door assemblies or listed rated fire dampers having a fire resistance rating consistent with the designated fire resistance rating of the barrier as determined by the performance requirements established by Chapter 4. (See 3.11.3.4 for penetration seals for through penetration fire stops.) Passive fire protection devices such as doors and dampers shall conform with the following NFPA standards, as applicable: (1) NFPA 80, Standard for Fire Doors and Fire Windows (2) NFPA 90A, Standard for the Installation of Air-Conditioning and Ventilating Systems (3) NFPA 101, Life Safety Code Exception: Where fire area boundaries are not wall-to-wall, floor-to-ceiling boundaries with all penetrations sealed to the fire rating required of the boundaries, a performance-based analysis shall be required to assess the adequacy of fire barrier forming the fire boundary to determine if the barrier will withstand the fire effects of the hazards in the area. Openings in fire barriers shall be permitted to be protected by other means as acceptable to the AHJ.	Complies Via Previous Approval	[redacted]	NLS-86-137, Rev 3 Point by Point Comparison of HNP to Requirements of NUREG 0800, 5/7/1986 SHNPP FSAR 9.5.1 LAP-83-479, Point by Point Comparison of HNP with NUREG-0800 NUREG-1038, Safety Evaluation Report Related to the Operation of the Shearon Harris Nuclear Power Plant, Units 1 and 2 - Docket Nos. STN-50-400 and STN 50-401, Rev. Original, 11/1/1983	
		Complies with Clarification	[redacted]	NLS-86-137, Rev 3 Point by Point Comparison of HNP to Requirements of NUREG 0800, 5/7/1986 Shearon Harris FSAR, Shearon Harris FSAR HNP-M/BMRK-0004, Code Compliance Evaluation NFPA 90A, Air Conditioning and Ventilating Systems (1981), Rev. 001 NUREG-1038 Supplement 4, Safety Evaluation Report Related to the Operation of the Shearon Harris Nuclear Power Plant, Unit 1 - Docket No. STN-50-400, Rev. SSER 4, 10/1/1986 HNP-M/BMRK-0003, Code Compliance Evaluation NFPA 80, Standard for Fire Doors and Windows, Rev. 001	

Table B-1 - NFPA 805 Ch. 3 Transition

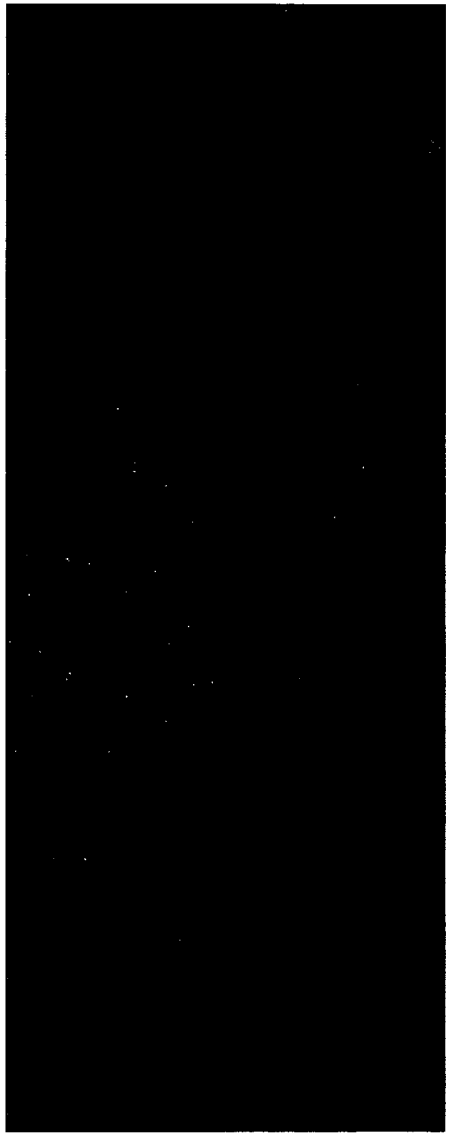
NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.11.4 Through Penetration Fire Stops.	3.11.4* Through Penetration Fire Stops. Through penetration fire stops for penetrations such as pipes, conduits, bus ducts, cables, wires, pneumatic tubes and ducts, and similar building service equipment that pass through fire barriers shall be protected as follows. (a) The annular space between the penetrating item and the through opening in the fire barrier shall be filled with a qualified fire-resistive penetration seal assembly capable of maintaining the fire resistance of the fire barrier. The assembly shall be qualified by tests in accordance with a fire test protocol acceptable to the AHJ or be protected by a listed fire-rated device for the specified fire-resistive period. (b) Conduits shall be provided with an internal fire seal that has an equivalent fire-resistive rating to that of the fire barrier through opening fire stop and shall be permitted to be installed on either side of the barrier in a location that is as close to the barrier as possible. Exception: Openings inside conduit 4 in. (10.2 cm) or less in diameter shall be sealed at the fire barrier with a fire-rated internal seal unless the conduit extends greater than 5 ft (1.5 m) on each side of the fire barrier. In this case the conduit opening shall be provided with noncombustible material to prevent the passage of smoke and hot gases. The fill depth of the material packed to a depth of 2 in. (5.1 cm) shall constitute an acceptable smoke and hot gas seal in this application.	Complies Via Previous Approval		NUREG-1038, Safety Evaluation Report Related to the Operation of the Shearon Harris Nuclear Power Plant, Units 1 and 2 - Docket Nos. STN-50-400 and STN 50-401, Rev. Original, 11/1/1983 LAP-83-479, Point by Point Comparison of HNP with NUREG-0800	Section 9.5.1.4, pg 9-47 Conformance Sec C.5.a(3), pg 39

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
[redacted]					

Table B-1 - NFPA 805 Ch. 3 Transition

NFPA 805 Ch. 3 Ref.	Requirements/Guidance	Compliance Statement	Compliance Basis	Reference Document	Document Detail
3.11.5 Electrical Raceway Fire Barrier Systems (ERFBS).	3.11.5* Electrical Raceway Fire Barrier Systems (ERFBS). ERFBS required by Chapter 4 shall be capable of resisting the fire effects of the hazards in the area. ERFBS shall be tested in accordance with and shall meet the acceptance criteria of NRC Generic Letter 86-10, Supplement 1, "Fire Endurance Test Acceptance Criteria for Fire Barrier Systems Used to Separate Safe Shutdown Trains Within the Same Fire Area." The ERFBS needs to adequately address the design requirements and limitations of supports and intervening items and their impact on the fire barrier system rating. The fire barrier system's ability to maintain the required nuclear safety circuits free of fire damage for a specific thermal exposure, barrier design, raceway size and type, cable size, fill, and type shall be demonstrated. Exception No. 1: When the temperatures inside the fire barrier system exceed the maximum temperature allowed by the acceptance criteria of Generic Letter 86-10, "Fire Endurance Acceptance Test Criteria for Fire Barrier Systems Used to Separate Redundant Safe Shutdown Training Within the Same Fire Area," Supplement 1, functionality of the cable at these elevated temperatures shall be demonstrated. Qualification demonstration of these cables shall be performed in accordance with the electrical testing requirements of Generic Letter 86-10, Supplement 1, Attachment 1, "Attachment Methods for *Demonstrating Functionality of Cables Protected by* Raceway Fire Barrier Systems During and After Fire Endurance Test Exposure." Exception No. 2: ERFBS systems employed prior to the issuance of Generic Letter 86-10, Supplement 1, are acceptable providing that the system successfully met the limiting end point temperature requirements as specified by the AHJ at the time of acceptance.	Complies with Clarification	[redacted]	ML061140227, Issuance of Amendment on use of Fire Resistive Cable , 5/1/2006	

Attachment G – Operator Manual Actions – Transition to Recovery Actions

(Non-Security Sensitive)

G.1 Background

NEI 04-02 suggests that a licensee submit a summary of its approach for addressing the transition of OMAs as recovery actions in the LAR (Regulatory Position C.1 and NEI-04-02, Rev. 1, Section 4.6). As a minimum, NEI 04-02 suggests that the assumptions, criteria, methodology, and overall results be included for the NRC to determine the acceptability of the licensee's methodology.

This process is addressed in draft FAQ 07-0030. The process in draft FAQ 07-0030 was discussed at the September 29, 2008 public meeting on the Harris Nuclear Plant LAR (ML082600736) and at the October 3, 2008 public meeting on the Pilot Plant LARs Lessons Learned (ML082520076).

Sections G.2 through G.7 provide the process from draft FAQ 07-0030 and the results of the HNP review. Section G.8 provides HNP specific supplemental information.

G.2 Operator Manual Action Transition Methodology

The following process was utilized for transitioning OMAs:

- Establishment of OMA Evaluation Groups. See discussion in Section G.3.
- Determination of whether a transitioning OMA is a post-transition recovery action, a defense-in-depth action, or neither. See discussion in Section G.4.
- Evaluation of the additional risk presented by the use of recovery actions credited in the analysis post-transition as a compliance strategy. See discussion in Section G.5.
- Evaluation of the feasibility of the recovery and DID actions credited in the analysis post-transition. See discussion in Section G.6.
- Evaluation of the reliability of recovery actions credited in the analysis post-transition as a compliance strategy. See discussion in Section G.7.

Note: Section 1.6.52 of NFPA 805 dated 2001 provides a definition of recovery action:

> *"Recovery Action. Activities to achieve the nuclear safety performance criteria that take place outside of the main control room or outside of the primary control station(s) for the equipment being operated, including the replacement or modification of components."*

Based on this definition, Alternative Shutdown actions (Bin D OMAs) at the primary control station are not considered recovery actions.

NFPA 805 does not provide a definition of "primary control station". Since no definition is provided, the definition of "emergency control station" from Regulatory Guide 1.189, Revision 1 will be utilized as the definition of "primary control station" in a post-transition NFPA 805 program:

> *"A location outside the main control room where actions are taken by operations personnel to manipulate plant systems and controls to achieve safe shutdown of the reactor."*

For the purposes of recovery action definition, primary control stations include remote/alternative shutdown panels, valve control stations, local instrumentation/monitoring panels, and component controls provided at motor control panels, load centers, switchgear, etc. Local manual valve operation, repairs, and operation of components manually at the component location or breaker due to loss of power/control are not considered primary control stations.

A clarification on the definition of recovery actions/primary control stations was presented by the NRC at the October 3, 2008 public meeting on Pilot Plant LARs lessons learned (ML082520076).

NFPA 805 does not specifically define DID actions that operations may take to respond to a fire (e.g., opening breakers, manually positioning valves). The process for determining whether a pre-transition OMA should be classified as a DID action is discussed in Section G.4.

G.3 Establishment of OMA Evaluation Groups

G.3.1 Process

Figure G-1 depicts the general process for establishing OMA evaluation groups. This process 'bins' transitioning OMAs. The 'bin' identifiers are for ease of reference. In following the chart, once the action is defined for the first time it is "binned" and not considered for any other categorization.

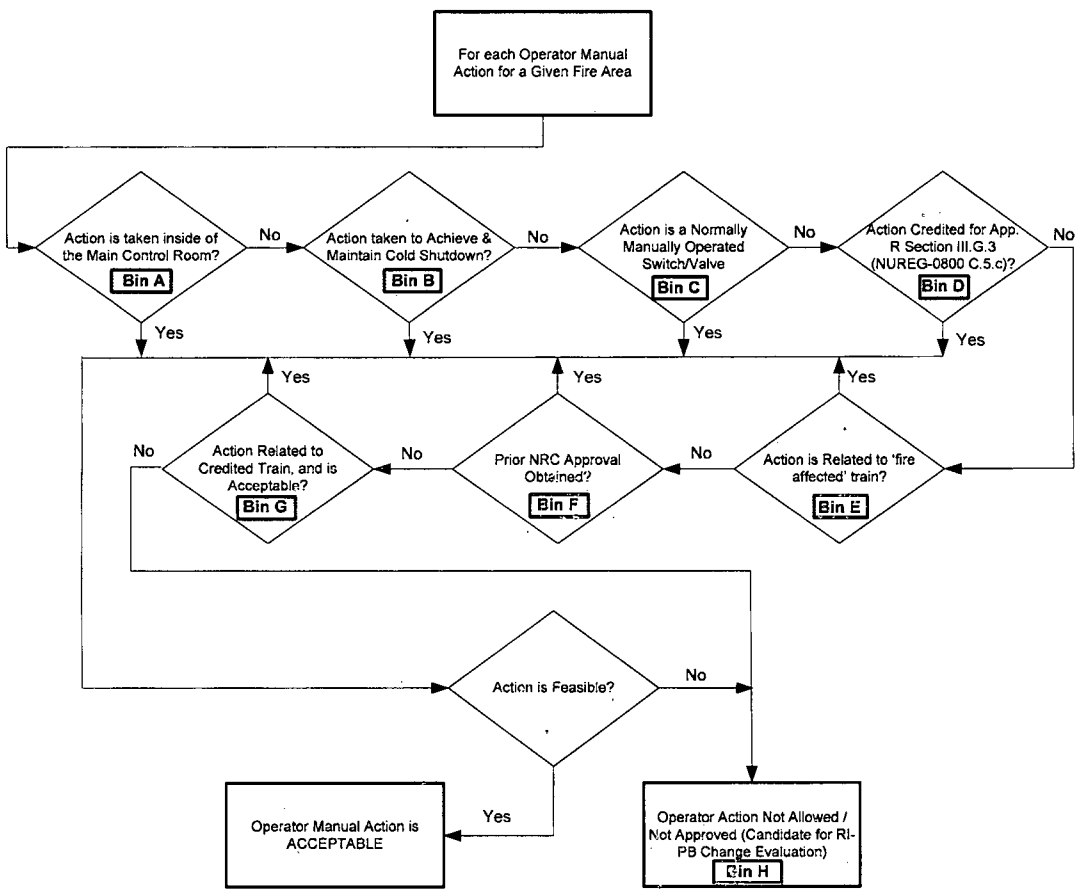


Figure G-1 General Process to Transition Operator Manual Actions (Ref. FAQ 06-0012)

OMAs that are allowed and/or have been previously reviewed and approved by the NRC (as documented in an approved exemption/deviation/SER) can be transitioned without using the change evaluation process.

This process was established in FAQ 06-0012 (Closure Memo ML072340368). Examples of the OMA bins and clarification on the process are provided in FAQ 06-0012.

G.3.2 Results

A list of pre-transition OMAs and the results of the binning process is provided in Table G-2.

G.4 Characterization of Post-Transition Actions

G.4.1 Process

In addition to the determination of the OMAs that require a change evaluation (i.e., determination of OMA evaluation groups in Section G.3), the process outlined in Figure G-2 was used to determine the scope of recovery actions and defense-in-depth actions that will remain following NFPA 805 transition.

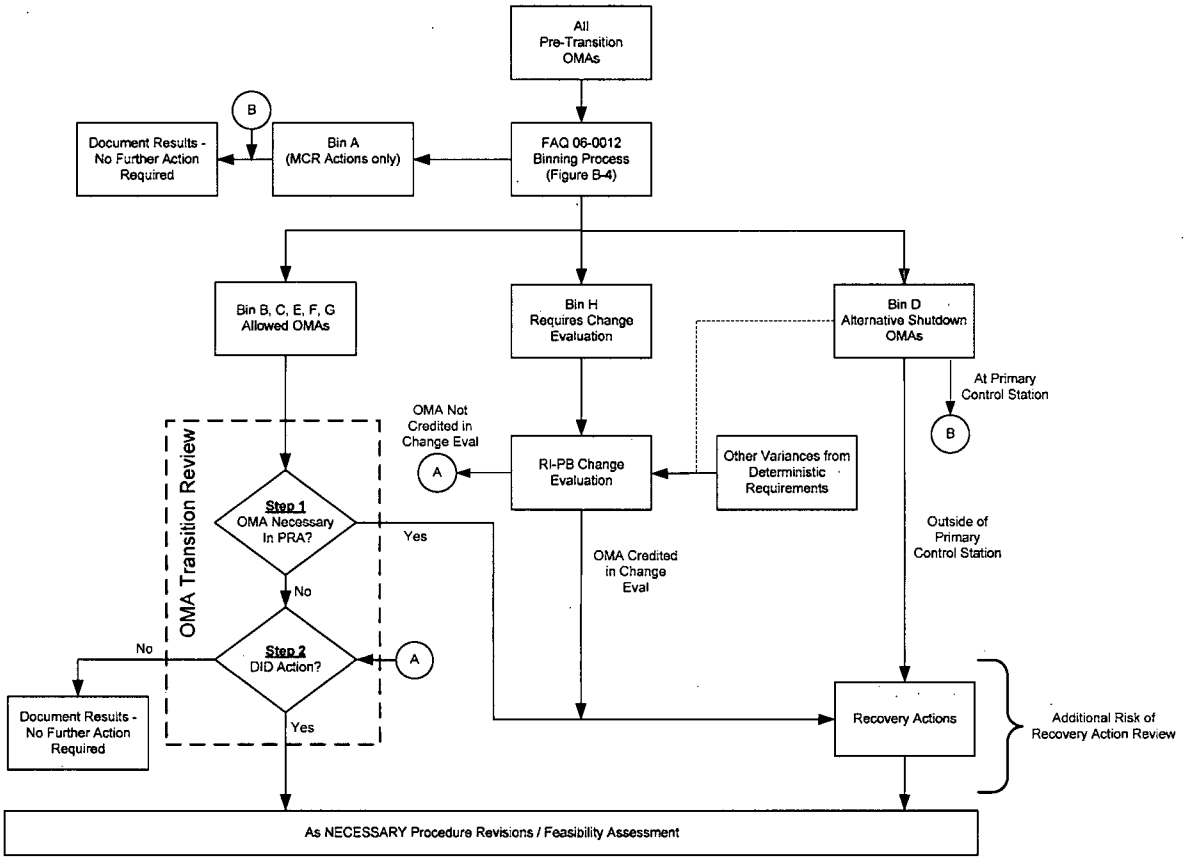


Figure G-2 Determination of Post-Transition Recovery Actions and Necessary Supporting Analyses

G.4.1.1 FAQ 06-0012 OMA Binning Process

The process begins with the binning of all pre-transition OMAs per FAQ 06-0012, as described in Section G-3. The outcome of the binning process, with respect to the determination of credit taken for recovery actions, could result in the following categories, based upon draft FAQ 07-0030:

- Bin H OMAs, which should be addressed by the RI-PB change evaluation process.
- Pre-transition allowed OMAs, which do not conflict with regulatory requirements (Bins B, C, E, F, and G).[4] These actions should be assessed in the OMA Transition Review to determine if the actions should be:
  - Recovery actions, or
  - DID actions, or
  - Neither recovery actions nor DID actions.

[4] Bin A (Actions taken in the main control room) are not considered OMAs (pre-transition) or recovery actions (post-transition), and can be excluded from additional consideration.

- Bin D OMAs to support implementation of alternative shutdown capability per 10 CFR 50, Appendix R, Section III.G.3 (C.5.c of NUREG-0800) are allowed under the current regulations. Due to the unique circumstances associated with alternative shutdown capability, these actions should be retained as recovery actions.[5]
- Bin F OMAs are those not associated with alternative shutdown that have prior NRC approval. These actions may be treated as recovery actions without additional OMA Transition Review. A licensee may choose to treat these in other Bins as appropriate and disposition them in accordance with the process.

G.4.1.2 Other Variances from Deterministic Requirements

Depending on how variances from the deterministic requirements are characterized, a variance may or may not be designated as a Bin H OMA. For example, a variance may be characterized as a cable lacking protection/separation per the pre-transition deterministic criteria. In these instances, the change evaluation will initially assess the condition for acceptability without crediting an OMA. An output of the change evaluation may be the need for a recovery action (that did not exist as a pre-transition OMA), or the need for a post-transition defense-in-depth action (that did not exist as a pre-transition OMA). These actions should be included as part of the OMA Transition Review.

G.4.1.3 NFPA 805 Change Evaluation - Process

Bin H OMAs were evaluated as part of the RI-PB change evaluation process, as described in Section 4.5 of this transition report. Typically, the condition that necessitated the need for the pre-transition OMA is evaluated. For example, the condition could be a spurious operation of a component due to potential fire damage to a cable. If the OMA is credited to meet the change evaluation acceptance criteria and is modeled in the Fire PRA, then the OMA is considered a post-transition recovery action.

If the OMA is not credited to meet the change evaluation acceptance criteria, the OMA was included with the currently allowed OMAs as part of the OMA Transition Review to determine if the OMA should be characterized as a post-transition 'defense-in-depth' action.

G.4.1.4 OMA Transition Review Process

'OMA Transition Review' is the process for reviewing OMAs that are not initially categorized as recovery actions to determine if they warrant additional consideration as recovery actions, defense-in-depth actions, or neither.

The first step in the OMA transition review was to assess allowed OMAs characterized as Bin B, C, E, F, and G for their necessity in the Fire PRA. This step is intended to identify OMAs that are modeled in the Fire PRA and are credited as providing a risk benefit worthy of characterization as a 'recovery action'. Those OMAs that are either not modeled in the Fire PRA or that are modeled in the Fire PRA but do not provide a fire risk benefit worthy of characterization as a 'recovery action' were assessed further for retention as a defense-in-depth

[5] Note that the definition of recovery actions in Section 1.6.52 of NFPA 805 includes only those actions "...outside of the main control room or outside of the primary control station(s)...". Therefore, Bin D OMAs at the primary control station are not considered recovery actions and need not be addressed by the OMA Transition Review for additional considerations, other than impact of these primary control station actions on the performance of other actions (e.g., timing, coordination of actions, etc.).

action. This determination of risk is part of the process for evaluating the additional risk of the use of recovery actions discussed in Section G.5.

The second step of the OMA transition review determined whether these remaining OMAs (including those that were not credited as recovery actions in the change evaluations) should be considered as DID actions. This review required judgment and was based on factors such as:

- Relevant scenarios in the Fire PRA that involve the OMA/cable discrepancy of concern.

  For example, an action that was not credited as a recovery action may exist in a fire area with higher fire risk or in scenarios with a high calculated CCDP/CDF. These types of actions would be considered good candidates for DID actions.

- The timing of the action.

  An OMA, although not considered a recovery action, may need to be accomplished in a short time frame (for example, within 2 hours) under deterministic fire damage assumptions.

- Integration of other elements of defense-in-depth.

  A fire area with an inadequate balance of defense-in-depth elements may warrant strengthening of the third element of defense in depth: "Providing an adequate level of fire protection for SSCs important to safety, so that a fire that is not promptly extinguished will not prevent essential plant safety functions from being performed"(NFPA 805 Section 1.2(3)). For example, an area without automatic detection and a high scenario CCDP may warrant a defense-in-depth action. Although the OMA Transition Review is not a formal change evaluation, the principles in NEI 04-02 Section 5.3 can be used as a guide for review of defense-in-depth.

- Additional actions related to modeling differences between the Fire PRA and NSCA.

  There are known modeling differences between a Fire PRA and NSCA due to different success criteria, end states, etc. Although an OMA may be associated with a function that is not considered a significant contribution to CDF, the OMA may be considered important enough to the NSCA to retain as a DID action. An example would be components in the NSCA associated with maintaining natural circulation at a PWR that are not modeled explicitly in the Fire PRA since they are not part of a core damage sequence.

Resolution of vulnerabilities identified as part of the Fire PRA related to the loss of function associated with the pre-transition allowed OMAs should be included in the overall integrated decision-making process associated with the NFPA 805 transition. For example, the fire-induced cable losses prompting the need for an allowed OMA may be a significant contributor to risk in the Fire PRA. Although a change evaluation is not required to address these risk contributors, other decisions to reduce fire risk from the PRA insight may include enhancements to address these items.

G.4.2 Results

Each pre-transition OMA was characterized as a 'recovery action, 'defense-in-depth action', or neither. There were no Bin H OMAs that were transitioned as recovery actions. The only OMAs that have been retained as Recovery Actions are those being credited for Alternative Shutdown (Bin D). Those 'defense-in-depth actions' that will continue to be used in the fire safe

shutdown procedures are required to meet the feasibility criteria provided in Section G.6. A list of pre-transition OMAs and their characterization as a 'recovery action, 'defense-in-depth action', or neither is provided in Table G-2.

G.5 Evaluation of the Additional Risk of the Use of Recovery Actions

G.5.1 Background

NFPA 805 Section 4.2.3.1 does not allow recovery actions when using the deterministic approach to meet the nuclear safety performance criteria. However, the use of recovery actions is allowed by NFPA 805 using a performance-based, risk informed approach, provided that the additional risk presented by the recovery actions has been evaluated by the licensee in accordance with NFPA 805 Section 4.2.4.

Section 4.2.4 of NFPA 805 (2001) states:

> *"4.2.4* Performance-Based Approach. This subsection shall provide for a performance-based alternative to the deterministic approach provided in 4.2.3. When the use of recovery actions has resulted in the use of this approach, the additional risk presented by their use shall be evaluated. When the fire modeling or other engineering analysis, including the use of recovery actions for nuclear safety analysis, is used, the approach described in 4.2.4.1 shall be used. When fire risk evaluation is used, the approach described in 4.2.4.2 shall be used."*

The explanatory material in Appendix A to NFPA 805 states:

> *"A.4.2.4 Where recovery actions are the primary means to recover and re-establish any of the nuclear safety performance criteria (e.g., inventory and pressure control; decay heat removal), in lieu of meeting the deterministic approach as specified by 4.2.3, risk can be increased. The risk for the fire area and the risk presented by the implementation of recovery actions to recover the nuclear safety function should be compared to the risk associated with maintaining the function free of fire damage in accordance with the deterministic requirements specified in Chapter 4. Additional fire protection systems and features might have to be provided in the fire area to balance the risk."*

The treatment of additional risk may vary in approach based on its characterization in previous steps and its level of modeling in the Fire PRA. The categories used to define the methods for treatment of additional risk presented by the use of recovery actions are:

- Alternative Shutdown Recovery Actions (G.5.2)
- Non-Alternative Shutdown Actions (G.5.3)

In addition, the review of potential negative risk for OMAs is discussed in Section G.5.4.

G.5.2 Alternative Shutdown Recovery Actions

G.5.2.1 Process

Due to the unique circumstances associated with alternative shutdown capability, the Bin D actions should be retained as recovery actions by the NSCA. The Fire PRA performed as part of NFPA 805 transition included the evaluation of alternative shutdown fire areas. The

additional risk presented by the use of recovery actions for alternative shutdown fire areas (addressed by 10 CFR 50, Appendix R Section III.G.3/NUREG-0800 Section C.5.c) was addressed by inclusion of these fire areas in the Fire PRA performed as part of the NFPA 805 transition.

OMAs relied upon in alternative shutdown fire areas can be assessed qualitatively or quantitatively to determine risk impact. OMAs may or may not be explicitly modeled in the Fire PRA for alternative shutdown fire areas. Fire areas relying on control room abandonment for pre-transition deterministic compliance (e.g., Control Room fires) are modeled in the Fire PRA using guidance from NUREG/CR-6850 Task 11 (Section 11.5.2). The alternative shutdown recovery actions are not explicitly modeled in the Fire PRA.

OMAs that can contribute significantly to the overall integrated decision-making process associated with the NFPA 805 transition should be identified.

An alternative approach to characterization of the Bin D OMAs as recovery actions would be to eliminate/modify the Bin D OMAs using the change evaluation process as part of the NFPA 805 transition process.

G.5.2.2 Results

The alternative safe shutdown recovery actions are not modeled in the fire PRA for those fire scenarios in the Main Control Room that result in control room abandonment. This provides a bounding evaluation. For other areas where the alternative safe shutdown actions could be implemented, the recovery actions that are included in the fire PRA are those actions that have been previously modeled in the PRA. An example would be manually starting an auxiliary feed water pump to provide a secondary heat sink. This action is included when appropriate or subsumed within related operator actions in the PRA.

G.5.3 Non-Alternative Shutdown Actions

G.5.3.1 Process

G.5.3.1.1 Change Evaluation Recovery Actions

Pre-transition unallowed OMAs (Bin H OMAs per FAQ 06-0012) that are to be credited as recovery actions in a RI-PB change evaluation, including modeling in the Fire PRA, should be specifically addressed using the Fire PRA for additional risk presented by their use. NFPA 805, Section 4.2.4.2 states that the risk evaluation should compare the risk associated with implementation of the deterministic requirements with the proposed alternative (in this case the recovery actions).

G.5.3.1.2 Other Actions (e.g., Defense-in-Depth)

NFPA 805 requires the evaluation of additional risk when the use of recovery actions is credited to meet the nuclear safety performance criteria. Since these actions are defense-in-depth actions, an assessment of the additional risk is not necessary. Note that a negative risk impact described in NEI 04-02 Section B.2.2.4.3.3 provides a mechanism for identifying adverse risk associated with performing an OMA.

Note: As part of the Fire PRA development, OMAs were typically not included in the Fire PRA model unless a more realistic treatment could result in a risk benefit. Therefore, a detailed assessment of risk of performing these actions is not necessary and the risk of the individual scenarios without credit for the action would bound the risk of crediting the action in the Fire

PRA. This bounding approach would be applicable to any actions determined not to be modeled in the Fire PRA as part of Step 1 of the OMA Transition Review and that should be retained as a defense-in-depth action. While the process shown in Figure G-2 does not explicitly require an assessment of the additional risk (since defense-in-depth actions are not 'credited recovery actions'), the bounding approach envelopes any additional risk associated with these actions. Due to the low risk benefit of performance of defense-in-depth actions, the additional effort per NUREG 1852 does not add measurable benefit.

G.5.3.1.3 Recovery Actions

For pre-transition allowed OMAs that were credited in the Fire PRA model (i.e., those that were already included as well as those that were added to the model), a quantitative assessment of risk similar to that required for a Bin H (unallowed) manual action should be performed (or a qualitative bounding assessment) to determine if the action provides a risk benefit worthy of characterization as a recovery action. In this assessment, similar to the evaluation of a variance, the additional risk presented by the use of the action is essentially a comparison of the risk of the action compared to maintaining the function free of fire damage.

G.5.3.2 Results

The only recovery actions that are being retained are Bin D actions, and they have been addressed in the discussion above.

The other OMAs credited in the deterministic safe shutdown analysis were considered for inclusion in the fire PRA. However, it was concluded that the limited credit that could be given to these actions in the PRA would not result in a significant reduction in CDF. Therefore, no additional actions were included in the fire PRA model, and no other actions are credited as recovery actions. These actions were reviewed for retention as defense-in-depth actions.

G.5.4 Fire PRA Review for Negative Risk Impact

G.5.4.1 Process

In addition to the evaluation of risk presented by the use of recovery actions per Section 4.2.4 of NFPA 805, additional reviews should be performed to determine those actions that could have a negative impact on plant risk. If recovery actions are determined to have a negative risk impact, they should be resolved during NFPA 805 implementation via an alternate strategy that eliminates the need for crediting the action for success in the NSCA. Defense-in-depth actions should also be evaluated to ensure there are no adverse impacts on NSCA performance.

G.5.4.2 Results

Pre-transition OMAs were reviewed to determine those that when implemented could have a negative effect on the PRA results by increasing the Core Damage Frequency (CDF) or Large Early Release Frequency (LERF). Those OMAs with negative effects are being revised by implementing alternate strategies to eliminate their need, or the action has been modified to mitigate the negative effects. The Fire PRA does not credit these actions. Thus, there are no adverse effects from these actions.

G.6 Evaluation of the Feasibility of Recovery and Defense-in-Depth Actions

G.6.1 Process

Recovery actions and defense-in-depth actions were evaluated against the feasibility criteria shown below in Table G-1.

Table G-1
Feasibility Criteria –Recovery Actions and Defense-in-Depth Actions
(Based on NFPA 805 Appendix B.5.2(e)and NEI 04-02 Revision1)

1	**Demonstrations** The proposed recovery actions should be verified in the field to ensure the action can be physically performed under the conditions expected during and after the fire event.
2	**Systems and Indications** Consider availability of systems and indications essential to perform the recovery action.
3	**Communications** The communications system should be evaluated to determine the availability of communication, where required for coordination of recovery actions.
4	**Emergency Lighting*** The lighting (fixed and/or portable) should be evaluated to ensure sufficient lighting is available to perform the intended action.
5	**Tools-Equipment*** Any tools, equipment, or keys required for the action should be available and accessible. This includes consideration of SCBA and personal protective equipment if required. (This includes staged equipment for repairs).
6	**Procedures** Written procedures should be provided.
7	**Staffing** Walk-through of operations guidance (modified, as necessary, based on the analysis) should be conducted to determine if adequate resources are available to perform the potential recovery actions within the time constraints (before an unrecoverable condition is reached), based on the minimum shift staffing. The use of essential personnel to perform actions should not interfere with any collateral industrial fire brigade or control room duties.
8	**Actions in the Fire Area*** When recovery actions are necessary in the fire area under consideration or require traversing through the fire area under consideration, the analysis should demonstrate that the area is tenable and that fire or fire suppressant damage will not prevent the recovery action from being performed.
9	**Time*** Sufficient time to travel to each action location and perform the action should exist. The action should be capable of being identified and performed in the time required to support the associated shutdown function(s) such that an unrecoverable condition does not occur. Previous action locations should be considered when sequential actions are required.
10	**Training** Training should be provided on the post-fire procedures and implementation of the recovery actions.
11	**Drills** Periodic drills that simulate the conditions to the extent practical, (e.g., communications between the control room and field actions, the use of SCBAs if credited, the appropriate use of operator aids)

* This feasibility criterion will be performed for time critical recovery and DID actions (less than 2 hours)

G.6.2 Results

G.6.2.1 MSO Impact on Thermal-Hydraulic Analyses

The review of fire-induced multiple spurious operations (MSOs) is described in Attachment F. The MSO reviews identified new spurious combinations that have been included in the Fire PRA. Those MSOs that could result in unrecoverable plant conditions based on the plant's current thermal-hydraulic analyses are being addressed through the modification process and/or risk informed performance based evaluations as summarized in the individual change evaluations. The pre-transition operator manual actions (OMAs) that are being retained as post-transition recovery actions or defense-in-depth (DID) actions must still meet the feasibility criteria identified in Table G-1. These criteria include consideration of the time available to complete the action before the plant is placed in an unrecoverable condition or unrecoverable equipment damage occurs for time critical actions.

In the event a new MSO combination is identified that requires further review in the Nuclear Safety Capability Assessment, and consideration is being given to using either a DID action or a recovery action to mitigate the plant impact, then the adequacy of the existing thermal-hydraulic analyses will be reviewed. Additional thermal-hydraulic analysis will be performed if necessary. If the new thermal-hydraulic analysis concludes that adequate time is not available to complete the proposed action, than an alternative strategy will be implemented to resolve the MSO.

The Fire PRA is an integrated model that includes the thermal-hydraulic response of the plant. Thus, the Fire PRA incorporates the effects of multiple failures and their potential impact on plant parameters and plant response. Those MSOs that were determined by the MSO Expert Panel review to be potentially significant were added to the PRA model, if they were not already included, such that their risk significance could be addressed. Any new MSOs identified in the future that are considered to be potentially risk-significant will be treated in a similar manner and added to the Fire PRA such that the potential risk impact can be assessed.

G.6.2.2 Thermal-Hydraulic Analyses used in Feasibility Evaluation

The feasibility analysis is contained in an Appendix to the Safe Shutdown Analysis calculation. The feasibility analysis includes a timed simulation to document that actions being performed are bounded by plant thermal-hydraulic analyses that support the nuclear safety performance criteria. In some instances, proposed actions were determined to be not feasible (not bounded by the results of thermal-hydraulic analyses) such that it was not possible to demonstrate that the proposed action could be successfully performed within the required time frame to prevent an unrecoverable condition, or a condition not analyzed in the existing safe shutdown analysis. In these cases, modifications are being implemented to address these issues.

Modifications that provide the greatest improvement to plant response and operator timelines include:

- EC 70350
- EC 70895
- EC 54065
- EC 67772
- EC 69501

EC 70350 and EC 70895 will insure RCP Seal Integrity, RCS Inventory Control, and Decay Heat Removal are restored prior to reaching an unrecoverable condition. See Attachment S for additional information describing these modifications.

As part of NFPA 805 transition, the feasibility analysis will incorporate, as appropriate, the results of any additional thermal-hydraulic analyses and/or feasibility simulations that may be performed.

G.6.2.3 Summary

All recovery actions and defense-in-depth actions were evaluated against the feasibility criteria established in Table G-1. The feasibility analysis (results of the timed simulation) is contained in an Appendix to the Safe Shutdown Analysis calculation.

G.7 Demonstrating Reliability

G.7.1 Process

The reliability of actions addressed by this process depends upon its characterization.

- The reliability of recovery actions that are modeled specifically in the Fire PRA is addressed using Fire PRA methods (i.e., HRA).
- The reliability of recovery actions that were pre-transition alternative/dedicated shutdown actions (i.e., actions not at a primary control station), if modeled specifically in the Fire PRA, is addressed using Fire PRA methods (i.e., HRA). Actions not explicitly modeled due to bounding treatment for additional risk (as described in Section G.6) do not require explicit reliability determination due to the bounding treatment.
- Defense-in-depth actions, by definition, do not have additional risk presented by their use and have been evaluated for potential negative risk impact. Therefore, they should be addressed by feasibility, but no explicit treatment of reliability is required (e.g., per NUREG-1852 or other methods).

G.7.2 Results

No OMA was 'added' to the Fire PRA model as none were deemed to provide significant reduction in risk as part of Fire PRA development. For the most part, the pre-transtion OMAs are relatively simple and highly reliable (i.e., open and close breakers, open and close valves, start pumps, etc.).

G.8 Supplemental Information

The following information is provided to support the transition of OMAs to recovery actions. Clarification on fire event confirmation is provided to support the CLB positions. In addition, the use of RI-PB approaches can demonstrate limitations on fire damage that support less complex SSD procedures than those associated with full area exposure fires.

G.8.1 Clarification of Event Confirmation

The pre-transition compliance strategy for a given fire area may include one or more OMAs to ensure the credited safe shutdown path is free of fire damage. For alternate shutdown, 10 minutes of operator time is assumed to be available to perform the transfer actions before any spurious equipment operations are postulated to occur. Embedded in this compliance strategy is the assumption that the 10 minute time frame does not start until confirmation of a severe fire and the decision is made to abandon the control room. A severe fire is one that is spreading beyond the initial piece of equipment or cabinet and is adversely affecting plant control or control room habitability.

The exact time of ignition is difficult to identify. The time of recognition is more readily identifiable through the activation of fire detection, fire suppression, equipment failure, personnel notification, or a combination thereof. The time of confirmation is defined as when a qualified individual goes to the location, concludes the fire event is active, and determines that the fire is severe or represents a challenging scenario. In some cases, the time between ignition and confirmation is immaterial. For example, an MCC fire may result in a spurious operation; however, if the MCC is well sealed and would not involve external targets, this fire is not likely to evolve into a severe or challenging fire. In other words, an MCC fire may self-extinguish or contain the fire to the point of origin (the MCC itself) before any action to initiate the fire SSD procedure is required.

For alternative shutdown scenarios, the decision to abandon the main control room is tied to confirmation of a challenging or severe fire. Therefore, linking confirmation of such a fire to the beginning of the 10 minute time frame to complete transfer to the ACP and other primary control stations before any spurious equipment operations occur is not only consistent with the CLB, it is also consistent with the practical implementation of any SSD strategy requiring control room abandonment. Industry test data as discussed in a recent draft revision to NEI 00-01 (ML080310056), while not conclusive, supports the assumption that spurious operations will not occur immediately upon exposing cables to fire effects. According to the draft revision to NEI 00-01, the average time to failure exceeded 30 minutes for thermoset cables and 15 minutes for thermoplastic cables.

The time period of propagation is necessary before there can be progressive degradation or loss of plant equipment. During this propagation period the fire would produce heat and smoke which allows time for detection and suppression activities to occur.

G.8.2 Risk-Informed, Performance-Based Fire Response

While the Fire PRA assumes that multiple failures including spurious operations associated with cables within the zone of influence for each fire ignition source take place simultaneously (with no credit for any delay until spurious operations occur), an actual fire involving exposed cable bundles or trays is not expected to result in spurious operations before 10 minutes.

Therefore, to avoid taking preemptive actions that are potentially adverse to risk, an assessment of the fire severity by the operators must precede implementation of the appropriate SSD strategy to determine that the fire is challenging to SSD. The actions taken, therefore, may include only a specific selection of the steps outlined in the bounding SSD strategy to ensure separation between the redundant and alternate trains credited for the fire area as a whole.

Failure to recognize that each fire may not require the same bounding SSD strategy could have negative implications on overall fire risk. Some actions may involve removing power to credited equipment to preclude spurious operation. As part of FAQ 07-0030, operator actions are reviewed for potential negative risk impact to address the potential for procedural actions that would eliminate credited equipment that has not been damaged directly by the fire (see Section G.5.4). If the action is symptom/target based, then there is no impact on the base Fire PRA assumptions, since the Fire PRA would not be impacted by removing power to equipment already presumed lost from fire damage. For example, if the containment spray pump control cables (that could lead to spurious pump start) are not within the zone of influence for a given scenario, then preemptive actions to trip containment spray and remove power would not be taken.

If these actions are purely "zone (or area) based" without consideration of fire severity rather than "symptom/target based", then the action would be reviewed against the Fire PRA to insure the action was risk neutral.

The optimized RI-PB approach is to apply a combination of the zone-based approach, which identifies the equipment that may be lost in the area, with a symptom/target based approach, which upon confirmation of a severe fire would assess the equipment expected to be lost based on that location and the ignition source.

The RI-PB approach described above will be incorporated into the HNP SSD procedures, as applicable, during the program implementation phase and will continue post-transition as changes are made to the FP program.

In conclusion, allowing a reasonable diagnostic time to define the appropriate safe shutdown strategy after confirmation of a severe fire is an appropriate RI-PB approach.

Table G-2 Legend for Action Type:

- DID – Defense-in-Depth action
- NR – Action not required
- NFA – No further action required
- RA – Recovery Action

Pages G-15 through G-81 are SECURITY RELATED INFORMATION.

These pages are withheld under 10 CFR 2.390.

Attachment S – Plant Modifications

(Non-Security Sensitive)

The modifications necessary to support the new licensing basis are identified in this attachment (Regulatory Guide 1.205, Revision 0, Regulatory Position C.2.2. and NEI-04-02, Revision 1, Section 4.5.1). These modifications will be complete by the end of Refueling Outage 16, currently scheduled for November 5, 2010 as described in the regulatory commitments.

Appropriate compensatory measures for any outstanding NFPA 805 related modifications will be maintained at the time of NFPA 805 program implementation until the completion of all of the NFPA 805 transition modifications as described in the table below.

Table S-1 - Plant Modifications

Rank	EC	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
[redacted]	54065	Prevent spurious opening of Containment Sump Recirculation valves 1CT-102 (2CT-V7SB-1) & 1CT-105 (2CT-V6SA-1) [redacted]	Reduce possibility of spurious operation of 1CT-102 and 1CT-105 by replacing existing cable with fire rated Meggitt Cable.	Y	Y	[redacted]
[redacted]	67742	Prevent the possibility of a fire induced inadvertent starting of the Purge Fans ES-1 (1A-NNS) and/or ES-1 (1B-NNS) [redacted]	Pre-fire breaker rack out position for breakers 1D21-6C:002 and 1E21-6A:002 in the OFF position to prevent the possibility of Fans ES-1 (1A-NNS) and/or ES-1 (1B-NNS) spuriously starting in the event of a fire	N	N	[redacted]

Table S-1 - Plant Modifications

Rank	EC	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
[redacted]	58779	Evaluate the availability of Emergency Diesel backed AC lighting in the Main Control Room for all postulated fires outside the MCR complex (12-A-CR, 12-A-CRC1, 12-A-HV&IR) and the availability of Emergency Diesel backed AC lights for the Auxiliary Control Panel (1-A-ACP) in the event of a fire in remote shutdown fire areas 12-A-CR, 12-A-CRC1, and 12-A-HV&IR.	Provide Emergency Lighting for the Main Control Room and the ACP. Diesel Backed lighting AC is available in the MCR for all scenarios and will be credited. Two 8 hour DC Emergency Lights will be added to the ACP Room.	N	Y	[redacted]
[redacted]	67743	Prevent Filter backwash, Nitrogen System, and Reactor Makeup Water from affecting the RCS following a postulated fire	Preclude the impact of the identified spurious valve misalignments by disabling the valves and/or their subsystems by changing normal position and depowering appropriate valves.	N	N	[redacted]

Table S-1 - Plant Modifications

Rank	EC	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
[redacted]	67772	Prevent 1SI-107, 1SI-52, 1SI-86, 1SI-3, and 1SI-4 from spuriously opening due to a fire induced fault.	Cable conductors are to be replaced with Meggitt Fire Rated Cable for the associated valves. The following cables are: 10408M-SB 10408N-SB 10408D-SB 10407L-SA 10407M-SA 10407D-SA 10440H-SA 10441J-SB 10439L-SA 10408C-SB 10408E-SB 10408L-SB 10407C-SA 10407E-SA 10407K-SA 10440C-SA 10440G-SA 10456N-SA 10441C-SB 10441H-SB 10456L-SB 10439C-SA 10439H-SA 10456M-SA	Y	Y	[redacted]

Table S-1 - Plant Modifications

Rank	EC	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
[redacted]	68768	Reduce the risk of fire in area 1-A-BAL-B2 and add additional protection to safe shutdown related cables and components in the area.	Add a transient exclusion zone on elevation 261 of RAB to the main corridor near the B chiller.	N	N	[redacted]
[redacted]	68656	1SW-1204 can open for postulated fires in 12-A-CR and 12-A-CRC1 [redacted]	The control wiring circuit will be modified to eliminate the possibility of a hot short maintaining the valve open following transfer by rerouting a conductor through a normally closed contact of a Transfer Relay. This will be done by modifying the transfer switch wiring, such that upon transfer to the ACP, the valve will fail closed.	N	Y	[redacted]

Table S-1 - Plant Modifications

Rank	EC	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
[redacted]	68769	Address generic 92-18 MOV SSD/FP issues.	Protect 1CS-235 (CHARGING LINE ISOL) and 1AF-55, (MD AFW ISOL to A SG) so a hot short will not break the operator and preclude a defense in depth OMA	N	Y	[redacted]
[redacted]	68645	1AF-74 Fire Damage in 1-A-SWGRB. [redacted]	Protect 1AF-74 from Fire Damage in 1-A-SWGRB and 1-A-ACP.	Y	Y	[redacted]
[redacted]	68648	Protect the cable 0988B AFW Isolation Signal from being received due to spurious cable interactions in 1-A-SWGRB.	Reroute existing cable out of Fire Area 1-A-SWGRB.	Y	Y	[redacted]

Table S-1 - Plant Modifications

Rank	EC	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
[redacted]	68660	Protect Cable 12761J for AH-6 B-SB during a postulated fire in 12-A-CR. [redacted]	AH-6B will have its cable removed from 12-A-CR and routed to a MUX cabinet in 1-A-SWGRB where the cable already terminates.	Y	Y	[redacted]
[redacted]	62343	Mitigate the consequences of spuriously opening PORV, 1MS-62 due to a fire induced fault.	Protect 1MS-62, C SG PORV from damage in 12-A-CR and 12-A-CRC1 by installing a kill switch on the ACP so the valve can be failed shut.	N	Y	[redacted]

Table S-1 - Plant Modifications

Rank	EC	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
[redacted]	69501	Reduce risk in the following fire areas: • 12-A-CR (Main Termination Cabinets/Inverters/MCB) • 12-A-CRC1 – High Risk PICs, Isolation Cabinets, SSPS In the PIC Room • 12-A-CRC1 – High Risk ARPs • 1-A CSRA & CSRB - Cable Spread Rooms • 1-A-SWRGA & SWGRB - Switchgear Rooms • 1-A-ACP -Auxiliary Control Panel (ACP)	Add incipient detection in the following Fire Areas in the cabinets indicated: • 12-A-CR (Main Termination Cabinets/Inverters/MCB) • 12-A-CRC1 – High Risk PICs, Isolation Cabinets, SSPS In the PIC Room • 12-A-CRC1 – High Risk ARPs • 1-A CSRA & CSRB - Cable Spread Rooms • 1-A-SWRGA & SWGRB - Switchgear Rooms • 1-A-ACP -Auxiliary Control Panel (ACP)	Y	Y	[redacted]

Table S-1 - Plant Modifications

Rank	EC	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
[redacted]	69501	Continued from above				[redacted]

Table S-1 - Plant Modifications

Rank	EC	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
[redacted]	69501	Continued from above				[redacted]

Table S-1 - Plant Modifications

Rank	EC	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
[redacted]	69501	Continued from above				[redacted]

Table S-1 - Plant Modifications

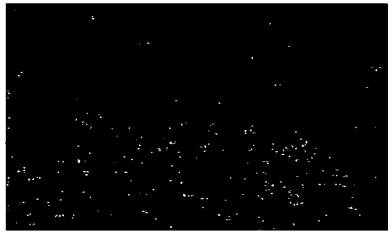
Rank	EC	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
[redacted]	68658	Prevent both 1CC-147 and 1CC-167 from spurious operation (open/closed) from a postulated fire in 12-A-CR. 	Install fuses in control circuit to prevent fire induced spurious opening.	Y	Y	[redacted]
[redacted]	53878	Prevent loss of normal charging flow path, loss of SIS flow path and/or loss of cooling to the RCP seals caused by certain postulated fires which result in multiple spurious actuations of 1CC-252, 1CS-217, 1CS-218, 1CS-219 and 1CS-220.	De-energize Charging Pump discharge header cross connect valves 1CS-217,1CS-218, 1CS-219 and 1CS-220.	Y	Y	[redacted]
[redacted]	69764	Upgrade existing credited Hemyc applications	Modify ERFBS consistent to the tested configuration for the fire resistance assumed.	Y	Y	[redacted]

Table S-1 - Plant Modifications

Rank	EC	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
[redacted]	69765	Upgrade existing credited MT applications.	Modify ERFBS consistent to the tested configuration for the fire resistance assumed.	Y	Y	[redacted]
[redacted]	68646	Prevent High Energy Arcing Fault damage.	It is proposed to add thermal shields over Bus 1B-SB, 1B-NNS,1E-NNS, 1B1-NNS in Switchgear Room 1B to prevent HEAF damage or to provide Hemyc fire wrap around the nearest cable tray to prevent vertical flame propagation and damage from a HEAF source fire.	Y	Y	[redacted]

Table S-1 - Plant Modifications

Rank	EC	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
[redacted]	70028	Provide dedicated access ladders at specific locations throughout the Reactor Auxiliary Building to support manual actions for a Safe Shutdown Event (SSE).	Install dedicated ladders throughout the Reactor Auxiliary Building to support Manual Action for SSE. [redacted]	N	N	[redacted]
[redacted]	70350	Supply RCP Seal injection during a postulated fire.	Install new Diesel Generator and dedicated Charging Pump to supply reactor coolant pump seal injection (automatic start) with additional ability to power station essential battery chargers for new diesel output.	Y	N	[redacted]

Table S-1 - Plant Modifications

Rank	EC	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
[redacted]	70027	Additional cooling is required for "B" RHR pump room and B CSIP Room during a postulated fire.	Add 480 VAC Power Outlets to supply compensatory fans for cooling B RHR pump room and B CSIP Room. [redacted]	N	Y	[redacted]
[redacted]	70895	Protect Turbine Driven AFW MOVs 1AF-137, 143 and 149 from fire damage in 12-A-CRC1. [redacted]	This will provide additional isolation of the circuit by the Transfer Switch on transfer to the ACP.	Y	N	[redacted]
[redacted]	62820	Upgrade the reliability of the SSD communications for a postulated fire.	Study related EC to identify modification actions to ensure communication for plant areas.	Y	Y	[redacted]

Table S-1 - Plant Modifications

Rank	EC	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
[redacted]	71147	Correct multiple spurious conditions inside MCCs (for example, where 2 high head SI valves could spuriously open due to a fire in a single MCC)	Relocation of breaker cubicles to minimize potential for internal cabinet fire exposure damage and limit fire induced damage to relevant control cables with the use of fire rated cable for internal cable runs in areas subject to fire damage.	N	Y	[redacted]

Legend:

- High = Modification would have an appreciable impact on reducing overall fire CDF.
- Med = Modification would have a measurable impact on reducing overall fire CDF.
- Low = Modification would have either an insignificant or no impact on reducing overall fire CDF.

EC Number	Completed Modification
48802	Remove Thermo-lag Wall and Replace with Interam Wrap in ACP
56427	Re-power 1CC-208 and 1CC-251 from an Alternate MCC
56428	Provide Alternate Power for WC-2B and 1AF-130
55938	Eliminate Non-feasible Manual Action for Dampers CZ-D73 and CZ-D74
58008	Install RWST Level Indicator at the ACP **(RF-13)**
59104, 60257	Install Manual Transfer Switch for C CSIP **(RF-13)**
52769	Establish VCT Valve Gallery as Fire Area/Install Fire Rated Cable for 1CS-165 and 1CS-166 **(RF-13)**
60436	Re-power 1CC-252 from Alternate MCC and Provide Cable Protection for 1CC-252 Cables **(RF-13)**
60434, 63858	Re-analyze Fire Area 1-A-BAL-B1 as 3 New Areas **(RF-13)**
60435	Provide Cable Protection for 1CH-279 Cables in 1-A-CSRB **(RF-13)**
60828	Evaluate Racking Out of Breaker for 1CS-167, 168, 169 and 170 During Operations

Attachment W – Internal Events PRA Quality

(Non-Security Sensitive)

The following table provides required capability category for the internal events PRA for use in Fire. The Harris internal events PRA meets or exceeds the specified capability category listed.

Internal Events PRA Capability Category Required for HNP Fire PRA Evaluations			
Technical Elements	**Cable Separation**	**Fire Barrier Worth**	**Risk Insights (e.g. OMA, MSO, monitoring)**
IE	Specific Fire requirements	Specific Fire requirements	Specific Fire requirements
AS	II	II	II
SC	II	II	II
DA	I	I	I
SY	II	II	II
HR	II	II	II
IF	None required	None required	None required
LE	II	II	II
QU	Specific Fire requirements	Specific Fire requirements	Specific Fire requirements
MU	Specific Fire requirements	Specific Fire requirements	Specific Fire requirements

The following are the findings and suggestions with resolution from the Harris Internal Events only Limited Peer Review conducted in December 2007. All findings and suggestions have been resolved satisfactorily for the internal events PRA to support the use as the base model for the Harris Fire PRA.

There are no unincorporated plant changes that are being tracked for the internal events PRA outside of those incorporated into the Fire PRA model.

Pages W-2 through W-14 are SECURITY RELATED INFORMATION.

These pages are withheld under 10 CFR 2.390.

Attachment X – Fire PRA Quality

(Non-Security Sensitive)

Identification of Application

In general the PRA application is to support the transition of Fire protection regulation to NFPA 805. For this general application, variances from the deterministic regulations are identified that must be assessed for risk to determine if they can be transitioned as-is. Specifically for the Harris Nuclear Plant transition to NFPA 805 there are basically three types of PRA analyses that support this application.

Determination of Capability Categories

In order to calculate CDF/LERF for this application, a fire PRA is needed. For HNP the fire PRA is built upon the internal events PRA, so that must also be assessed. Because the application is based on fire risk, only the sections of the internal events PRA that are impacted by initiating events that can be caused by fires need to be assessed when determining delta CDF for the variances presented, because the non-fire terms will cancel in the calculation. Using the single initiating event methodology and knowing that fires do not cause pipe failures, only transient sequences are required for this application. This includes the related success criteria and system models for these sequences. For these elements **(AS, SC, SY, HR, LE)**, category II is sufficient for determination of risk insights. Capability category II is sufficient because the Fire PRA is built upon system response models, which includes the systems analysis (SY), accident sequences (AS) and the supporting success criteria (SC). These must be of sufficient detail such that important fire, system, dependencies and component interactions as well as the required mitigation equipment are accounted for. Additionally the use of human failure events both as precursors events or recovery events must be of sufficient quality to support the risk insights as to the effectiveness of these actions. Capability category II is also required for the HR high level requirements (HLRs) and associated supporting requirements (SRs). Similarly Large Early Release Frequency (LERF) or LE must also be of sufficient detail such that potentially important contributors to LERF are accounted for. For Data analysis category I is sufficient because fire failures will dominate the equipment failures. Having the higher quality data does not have a significant impact on the delta Core Damage Frequency (CDF). SRs which have been assessed as Category I (or not met) for the stated elements of the HNP PRA will be evaluated explicitly for this application. Internal flood (IF) is not required for the application. The remaining elements (IE, QU) are addressed specifically in the SRs for fire standard. The quality of the internal events PRA is provided in Attachment W.

The NFPA 805 Fire PRA methodology is applied to variances from deterministic which have the most conservative fire methodology. The risk impact of these identified change evaluations are based on specific fire scenario and sources. The significant improvement is focus of fire damage based upon individual fire sources from the previous fire deterministic evaluation of faulting entire fire zones. The more specific Fire PRA method shows that generally Category I is sufficient for fire standard elements IGN, PP, FSS, CF, HRA, SF, UNC. Elements ES, CS, and FQ may require more realism in order to address overall risk issues, however none require higher than Category II due to the risk informed nature of this application, which also includes defense-in-depth and safety margin aspects. Other elements addressed in the fire PRA standard were not used for the HNP fire PRA and do not apply (QLS, QNS).

Necessary Scope and Results

The HNP fire PRA is a full fire PRA developed using the guidance provided by NUREG/CR-6850. This NUREG has been referenced by Regulatory Guide 1.205 as an acceptable method for developing a fire PRA to support NFPA-805. All of the elements needed to analyze delta CDF and delta LERF are included.

Modeling of SSC's and Activities

The HNP fire PRA is a full fire PRA developed using the guidance provided by NUREG/CR-6850. The steps outlined in NUREG/CR-6850 were completed to develop a fire PRA that has the necessary attributes for SSC modeling. The fire PRA used as a starting point the internal events PRA after completion work that resolved items identified by a Regulatory Guide 1.200 Gap Assessment, and the subsequent focused Peer Review. This results in all necessary SSCs and associated interactions such as Human Reliability Analysis being included in the Harris Fire PRA.

Peer Review

The HNP fire PRA has been reviewed at various stages. Individual elements were shared with NRC and industry during the pilot process. A pre-application audit of the HNP fire PRA was conducted by the NRC which assessed the HNP fire PRA against the Fire PRA Standard using the industry peer review process. A partial peer review was also conducted by the PWROG.

Determination of the Standard's Scope and Level of Detail

The current PRA is intended to address all areas of a fire PRA. No special issues have been identified for the application (NFPA-805) that are beyond the scope of the current standard.

Comparison of PRA Model to Standard

Based on the discussions above, it is determined that there are no SR's for any elements that need to be more than Category II. SRs for AS, SC, SY, DA, LE and ES, CS, and FQ that were reviewed and determined to be "not met" or Category I are specifically addressed in the attachment W.

Comparison of Harris Fire PRA to other Fire PRA

The Harris Fire PRA along with the Oconee Fire PRA are the two first PRAs developed using the guidance contained in NUREG/CR-6850. The model results and methodologies between these two efforts have been compared as part of the pilot process and the results have been shared with the NRC. It was identified that each site had uniquely identified issues caused in large part to specific plant design and arrangement. The two fire PRA Core Damage Frequencies are of the similar magnitude. No other fire PRA exists in a completed state to provide a meaningful comparison.

Use of Supplementary Analyses/Requirements

None identified

Fire PRA Capability Category Requirements

To be able to support the NFPA 805 change evaluation process the Fire PRA must have certain capability categories achieved to provide proper risk insights for any change. For the changes currently under consideration for the Harris NFPA 805 the following PRA capability categories requirements are provided.

Table X-1 – NFPA 805 Application Required Capability Category			
Supporting Requirements	**Cable Separation**	**Fire Barrier Worth**	**Risk Insights (e.g. OMA, MSO, NFPA 805 monitoring)**
PP-A1	Met	Met	Met
PP-B1	I	I	I
PP-B2	I	I	I
PP-B3	I	I	I
PP-B4	Met	Met	Met
PP-B5	NA	NA	NA
PP-B6	Met	Met	Met
PP-B7	Met	Met	Met
PP-C1	Met	Met	Met
PP-C2	Met	Met	Met
PP-C3	Met	Met	Met
PP-C4	Met	Met	Met
Plant Partitioning Discussion			
Capability Category I is adequate for PP SRs because the importance of all of this issue are dependent upon the individual fire sources and the specific targets in question. The fire area definition used in analysis could be important if fire areas were qualitative screened, but HNP analysis did not screen any fire areas.			
Supporting Requirements	**Cable Separation**	**Fire Barrier Worth**	**Risk Insights (e.g. OMA, MSO, NFPA 805 monitoring)**
ES-A1	Met	Met	Met
ES-A2	Met	Met	Met
ES-A3	Met	Met	Met
ES-A4	I/II	I/II	I/II
ES-A5	II	II	II
ES-A6	II	II	II
ES-B1	II	II	II
ES-B2	II	II	II
ES-B3	Met	Met	Met
ES-B4	II	II	II
ES-B5	Met	Met	Met
ES-B6	Met	Met	Met

ES-C1	Met	Met	Met
ES-C2	II	II	II
ES-D1	Met	Met	Met

Equipment Selection Discussion

Capability Category II is specified in order to be able to understand the cable/ component impact on system interactions and dependency. The issues such as cable separation, fire barrier worth or risk insights such as MSO reviews are specifically concerned with the cables, which have an associated components and system interactions. In order to have a realistic delta CDF or LERF the fire PRA need to include the same level of detail as the internal event PRA, and the safe shutdown analysis.

Supporting Requirements	Cable Separation	Fire Barrier Worth	Risk Insights (e.g. OMA, MSO, NFPA 805 monitoring)
CS-A1	Met	Met	Met
CS-A2	II	II	II
CS-A3	Met	Met	Met
CS-A4	Met	Met	Met
CS-A5	Met	Met	Met
CS-A6	Met	Met	Met
CS-A7	Met	Met	Met
CS-A8	Met	Met	Met
CS-A9	Met	Met	Met
CS-A10	I	I	I
CS-A11	NA	NA	NA
CS-B1	I	I	I
CS-C1	Met	Met	Met
CS-C2	Met	Met	Met
CS-C3	NA	NA	NA
CS-C4	Met	Met	Met

Cable Selection Discussion

Capability Category II is appropriate for supporting requirement CS-A2 to allow identification of multiple hot shorts. CS-A10 can CC-I to match the plant partitioning used in the analysis. CS-B1 can be Capability Category I, for circuit overcurrent coordination, which is adequate to evaluate the changes being considered. Those SRs with NA are for assumed routing, which Harris Fire PRA did not use.

Supporting Requirements	Cable Separation	Fire Barrier Worth	Risk Insights (e.g. OMA, MSO, NFPA 805 monitoring)
QLS-A1	None	None	None
QLS-A2	None	None	None
QLS-A3	None	None	None
QLS-A4	None	None	None
QLS-B1	None	None	None

QLS-B2	None	None	None
QLS-B3	None	None	None
Qualitative Screening			
HNP did not use qualitative screening to eliminate low risk fire areas thus there are not capability categories required.			
Supporting Requirements	**Cable Separation**	**Fire Barrier Worth**	**Risk Insights (e.g. OMA, MSO, NFPA 805 monitoring)**
PRM-A1	Met	Met	Met
PRM-A2	Met	Met	Met
PRM-A3	Met	Met	Met
PRM-A4	Met	Met	Met
PRM-A5	Met	Met	Met
PRM-A6	Met	Met	Met
PRM-B1	Met	Met	Met
PRM-B2	Met	Met	Met
PRM-B3	NA	NA	NA
PRM-B4	NA	NA	NA
PRM-B5	NA	NA	NA
PRM-B6	NA	NA	NA
PRM-B7	NA	NA	NA
PRM-B8	Met	Met	Met
PRM-B9	NA	NA	NA
PRM-B10	Met	Met	Met
PRM-B11	Met	Met	Met
PRM-B12	Met	Met	Met
PRM-B13	Met	Met	Met
PRM-B14	Met	Met	Met
PRM-C1	I	I	I
PRM-D1	Met	Met	Met
Plant Response Model Discussion			
For supporting requirement PRM-C1 the task requirements for CC-II are confusing and could not be understood by either the NRC staff review team or the industry review team. It is believed by Progress Energy that PRM-C1 for CC-II requires a review of MSO that could generate new previously not considered initiating event. Since the Harris Fire PRA had a MSO review to meet other SRs, this SR is not required, thus CC-1 is adequate. PRM-B3 to B7 are "NA" because no new initiating events were identified.			
Supporting Requirements	**Cable Separation**	**Fire Barrier Worth**	**Risk Insights (e.g. OMA, MSO, NFPA 805 monitoring)**
FSS-A1	Met	Met	Met
FSS-A2	Met	Met	Met
FSS-A3	Met	Met	Met

FSS-A4	Met	Met	Met
FSS-A5	I/II	I/II	I/II
FSS-A6	I/II	I/II	I/II
FSS-B1	Met	Met	Met
FSS-B2	I/II	I/II	I/II
FSS-C1	II	II	II
FSS-C2	II/III	II/III	II/III
FSS-C3	I	I	I
FSS-C4	I	I	I
FSS-C5	I/II	I/II	I/II
FSS-C6	I/II	I/II	I/II
FSS-C7	Met	Met	Met
FSS-C8	Met	Met	Met
FSS-D1	Met	Met	Met
FSS-D2	Met	Met	Met
FSS-D3	I	I	I
FSS-D4	Met	Met	Met
FSS-D5	I/II	I/II	I/II
FSS-D6	Met	Met	Met
FSS-D7	I	I	I
FSS-D8	Met	Met	Met
FSS-D9	I	I	I
FSS-D10	I	I	I
FSS-D11	Met	Met	Met
FSS-E1	Met	Met	Met
FSS-E2	Met	Met	Met
FSS-E3	I	I	I
FSS-E4	NA	NA	NA
FSS-F1	I/II	I/II	I/II
FSS-F2	I	I	I
FSS-F3	NA	NA	NA
FSS-G1	Met	Met	Met
FSS-G2	Met	Met	Met
FSS-G3	Met	Met	Met
FSS-G4	I	I	I
FSS-G5	NA	NA	NA
FSS-G6	I	I	I
FSS-H1	Met	Met	Met

FSS-H2	I	I	I
FSS-H3	Met	Met	Met
FSS-H4	Met	Met	Met
FSS-H5	I	I	I
FSS-H6	I	I	I
FSS-H7	Met	Met	Met
FSS-H8	Met	Met	Met
FSS-H9	Met	Met	Met
FSS-H10	Met	Met	Met

Fire Source Selection and Analysis Discussion

All of these SRs under FSS for HNP can be Capability Category I except FSS C1 and FSS C2, which should be category II. The nature of the cable separation, fire barrier worth, and MSO required more detailed fire growth in some areas. This was performed at HNP for many fire sources because the category I treatment did not provide realistic results. FSS C3 through C6, can be at Capability Category I because in general that treatment provides reasonable results. In some cases more detailed treatment was made, but may not have been required. FSS D3 cat I is appropriate, since HNP did not use qualitative screening for analysis units. Suppression system performance (D7) and potential smoke damage (D9) are acceptable at Capability Category I due to the minor impact these would have on the results. The D10 walk downs to confirm was actually performed at Category II/III, but Category I is acceptable for the delta CDF/LERF determinations, since the detailed walk downs tend to result in smaller CDF/LERF deltas. For FSS F1 and 2 category I is more than adequate, since Harris has an open Turbine Building and all of the structural steel fires of consequences are only in the Turbine Building and the outcomes are expected to be a reactor and turbine trip with minor complications, such as a loss of off-site power. FSS F3 is not required because the lack of a qualitative evaluation of structure steel during a turbine building oil fire does not have any measurable impact on CDF/LERF or the delta CDF/delta LERF for the changes that are being evaluated. The Harris Fire PRA already considers Turbine Building Oil fires and thus the qualitative assessment does not add any value to the results. FSS G4, and G6, which address multi-compartment analysis, can also be adequately evaluated at category I because the contribution to fire risk due to maintenance and failed barriers would be a very small additional risk (G4 and G6) and Harris does not have any active fire barriers (G5), thus that SR is NA. The Capability Category I for FSS-H5 and 6 is acceptable. These supporting requirements address documentation of the scenarios and the statistical and parametric uncertainty. The statistical and parameter uncertainty documentation do not have a direct impact on the specific results, but do indicate areas for further investigation. For the changes being evaluated in this table fire growth, severity factor, non-suppression probabilities all are dominate contributors to uncertainty.

Supporting Requirements	Cable Separation	Fire Barrier Worth	Risk Insights (e.g. OMA, MSO, NFPA 805 monitoring)
IGN-A1	Met	Met	Met
IGN-A2	NA	NA	NA
IGN-A3	NA	NA	NA
IGN-A4	I	I	I
IGN-A5	Met	Met	Met
IGN-A6	NA	NA	NA
IGN-A7	Met	Met	Met
IGN-A8	I/II	I/II	I/II
IGN-A9	Met	Met	Met
IGN-A10	I	I	I

IGN-B1	Met	Met	Met
IGN-B2	Met	Met	Met
IGN-B3	Met	Met	Met
IGN-B4	NA	NA	NA
IGN-B5	Met	Met	Met
Fire Ignition Frequency Discussion			
The IGN Capability Category I is adequate for the evaluation of cable separation, fire barrier worth, and risk insights such as MSO or OMA. The ignition frequency is a direct multiplier of the base CDF, and becomes less important in the delta analysis. In addition there are a number of industry concerns with how the generic ignition frequency has been determined and the potential updating of generic data will overwhelm any plant specific information. Those SRs that are "NA" are due to not updating the ignition frequency data with plant specific data.			
Supporting Requirements	**Cable Separation**	**Fire Barrier Worth**	**Risk Insights (e.g. OMA, MSO, NFPA 805 monitoring)**
QNS-A1	NA	NA	NA
QNS-B1	NA	NA	NA
QNS-B2	NA	NA	NA
QNS-C1	NA	NA	NA
QNS-D1	NA	NA	NA
QNS-D2	NA	NA	NA
Quantitative Screening Discussion			
Capability Category NA would be acceptable for the Harris fire PRA because Quantitative Screening was not used in the Harris Fire PRA.			
Supporting Requirements	**Cable Separation**	**Fire Barrier Worth**	**Risk Insights (e.g. OMA, MSO, NFPA 805 monitoring)**
CF-A1	I	I	I
CF-A2	Met	Met	Met
CF-B1	Met	Met	Met
Circuit Failure Analysis Discussion			
Capability Category I is adequate for the SR, CF-A1. This provides the most conservative circuit failure treatment and if acceptable results are obtained then no further work is required.			
Supporting Requirements	**Cable Separation**	**Fire Barrier Worth**	**Risk Insights (e.g. OMA, MSO, NFPA 805 monitoring)**
HRA-A1	Met	Met	Met
HRA-A2	Met	Met	Met
HRA-B1	Met	Met	Met
HRA-B2	Met	Met	Met
HRA-B3	Met	Met	Met
HRA-C1	Met	Met	Met
HRA-D1	NA	NA	NA
HRA-E1	Met	Met	Met

Post-Fire Human Reliability Analysis Discussion

All of the SRs except HRA-D1 are met. HRA-D1 will be required to be met to evaluate any credited fire operator actions (OMAs) that are used in the Fire PRA. Currently none of the fire procedure operator actions are credited in the Fire PRA, thus the current CC is "NA".

Supporting Requirements	Cable Separation	Fire Barrier Worth	Risk Insights (e.g. OMA, MSO, NFPA 805 monitoring)
SF-A1	Met	Met	Met
SF-A2	Met	Met	Met
SF-A3	Met	Met	Met
SF-A4	Met	Met	Met
SF-A5	Met	Met	Met
SF-B1	Met	Met	Met

Seismic/Fire Interactions Discussion

All of the SRs are met.

Supporting Requirements	Cable Separation	Fire Barrier Worth	Risk Insights (e.g. OMA, MSO, NFPA 805 monitoring)
FQ-A1	Met	Met	Met
FQ-A2	Met	Met	Met
FQ-A3	Met	Met	Met
FQ-A4	Met	Met	Met
FQ-B1	Met	Met	Met
FQ-C1	Met	Met	Met
FQ-D1	Met	Met	Met
FQ-E1	Met	Met	Met
FQ-F1	Met	Met	Met
FQ-F2	Met	Met	Met

Fire Risk Quantification

All the SRs are met.

Supporting Requirements	Cable Separation	Fire Barrier Worth	Risk Insights (e.g. OMA, MSO, NFPA 805 monitoring)
UNC-A1	Met	Met	Met
UNC-A2	Met	Met	Met
UNC-A3	Met	Met	Met

Uncertainty and Sensitivity Analyses Discussion

All the SRs are met.

Supporting Requirements	Cable Separation	Fire Barrier Worth	Risk Insights (e.g. OMA, MSO, NFPA 805 monitoring)
MU-A1	Met	Met	Met
MU-A2	Met	Met	Met

MU-B1	Met	Met	Met
MU-B2	Met	Met	Met
MU-B3	Met	Met	Met
MU-B4	Met	Met	Met
MU-B5	Met	Met	Met
MU-B6	Met	Met	Met
MU-C1	Met	Met	Met
MU-D1	Met	Met	Met
MU-E1	Met	Met	Met
MU-F1	Met	Met	Met
MU-F2	Met	Met	Met
PRA Maintenance and Update Discussion			
All the SRs are met.			

The evaluated capability after both the NRC staff review and the Industry Peer Review are provided in the following table. With the disposition of the Findings and Suggestions from both the NRC staff review and the Industry Peer Review team, the Harris Fire PRA has a PRA that meets or exceeds the quality requirements provided in Table X-1 above.

Table X-2 – HNP Summary of Evaluated Capability

Fire Std SR	NRC Staff Review Results	Industry Peer Review Results	Status before Final F &O resolution	After F& O Resolution Status*
PP-A1	Met	Not Reviewed	Met	Met
PP-B1	Not Met	Not Met	Not Met	CC-II/III
PP-B2	Not Met	Not Met	Not Met	CC-II/III
PP-B3	N/A	Not Reviewed	N/A	CC-I
PP-B4	Met	Not Reviewed	Met	Met
PP-B5	N/A	Not Reviewed	N/A	NA
PP-B6	Met	Not Reviewed	Met	Met
PP-B7	Met	Not Reviewed	Met	Met
PP-C1	Met	Not Reviewed	Met	Met
PP-C2	Met	Not Reviewed	Met	Met
PP-C3	Not Met	Not Met	Not Met	Met
PP-C4	Met	Not Reviewed	Met	Met
ES-A1	Met	Not Reviewed	Met	Met
ES-A2	Met	Not Reviewed	Met	Met
ES-A3	Met	Not Reviewed	Met	Met
ES-A4	CC-III	Not Reviewed	CC-III	CC-III
ES-A5	CC-II	Not Reviewed	CC-II	CC-II
ES-A6	Not Met	CC-III	CC-III	CC-III
ES-B1	CC-III	Not Reviewed	CC-III	CC-III
ES-B2	CC-II	Not Reviewed	CC-II	CC-II
ES-B3	Met	Not Reviewed	Met	Met
ES-B4	Not Met	CC-III	CC-III	CC-III
ES-B5	Met	Not Reviewed	Met	Met
ES-B6	Met	Not Reviewed	Met	Met
ES-C1	Not Met	Not Met	Not Met	Met
ES-C2	CC-II	Not Reviewed	CC-II	CC-II

Table X-2 – HNP Summary of Evaluated Capability				
Fire Std SR	NRC Staff Review Results	Industry Peer Review Results	Status before Final F &O resolution	After F& O Resolution Status*
ES-D1	Not Met	Met	Met	Met
CS-A1	Met	Not Reviewed	Met	Met
CS-A2	Met	CC-II	CC-II	CC-II
CS-A3	Not Met	Met	Met	Met
CS-A4	Not Met	Met	Met	Met
CS-A5	Met	Not Reviewed	Met	Met
CS-A6	Met	Not Reviewed	Met	Met
CS-A7	Not Met	Met	Met	Met
CS-A8	Not Met	Met	Met	Met
CS-A9	Met	Not Reviewed	Met	Met
CS-A10	CC-III	Not Reviewed	CC-III	CC-III
CS-A11	N/A	Not Reviewed	NA	NA
CS-B1	CC-II/III	Not Reviewed	CC-II/III	CC-II/III
CS-C1	Met	Not Reviewed	Met	Met
CS-C2	Met	Not Reviewed	Met	Met
CS-C3	N/A	N/A	NA	NA
CS-C4	Not Met	Met	Met	Met
QLS-A1	The licensee did not perform a qualitative screening. This element N/A.	QLS & QNS were not reviewed.	NA	NA
QLS-A2	The licensee did not perform a qualitative screening. This element N/A.	QLS & QNS were not reviewed.	NA	NA
QLS-A3	The licensee did not perform a qualitative screening. This element N/A.	QLS & QNS were not reviewed.	NA	NA
QLS-A4	The licensee did not perform a qualitative screening. This element N/A.	QLS & QNS were not reviewed.	NA	NA
QLS-B1	The licensee did not perform a qualitative screening. This element N/A.	QLS & QNS were not reviewed.	NA	NA

Table X-2 – HNP Summary of Evaluated Capability				
Fire Std SR	**NRC Staff Review Results**	**Industry Peer Review Results**	**Status before Final F &O resolution**	**After F& O Resolution Status***
QLS-B2	The licensee did not perform a qualitative screening. This element N/A.	QLS & QNS were not reviewed.	NA	NA
QLS-B3	The licensee did not perform a qualitative screening. This element N/A.	QLS & QNS were not reviewed.	NA	NA
PRM-A1	Not Met	Met	Met	Met
PRM-A2	Not Met	Met	Met	Met
PRM-A3	Met	Not Reviewed	Met	Met
PRM-A4	Met	Not Reviewed	Met	Met
PRM-A5	Met	Not Reviewed	Met	Met
PRM-A6	Met	Not Reviewed	Met	Met
PRM-B1	Not Met	Met	Met	Met
PRM-B2	Met	Not Reviewed	Met	Met
PRM-B3	N/A	NA	N/A	NA
PRM-B4	N/A	NA	N/A	NA
PRM-B5	N/A	N/A	N/A	NA
PRM-B6	N/A	N/A	N/A	NA
PRM-B7	N/A	N/A	N/A	NA
PRM-B8	Met	Not Reviewed	Met	Met
PRM-B9	N/A	Not Reviewed	N/A	NA
PRM-B10	Met	Not Reviewed	Met	Met
PRM-B11	Met	Not Reviewed	Met	Met
PRM-B12	Met	Not Reviewed	Met	Met
PRM-B13	Not Met	Met	Met	Met
PRM-B14	Not Met	Met	Met	Met
PRM-C1	Issue with Standard	Issue with Standard	Issue with Standard	ASME Inquiry
PRM-D1	Met	Not Reviewed	Met	Met
FSS-A1	Met	Not Reviewed	Met	Met
FSS-A2	Not Met	Met	Met	Met

Table X-2 – HNP Summary of Evaluated Capability				
Fire Std SR	**NRC Staff Review Results**	**Industry Peer Review Results**	**Status before Final F &O resolution**	**After F& O Resolution Status***
FSS-A3	Met	Not Reviewed	Met	Met
FSS-A4	Met	Not Reviewed	Met	Met
FSS-A5	CC-III	Not Reviewed	CC-III	CC-III
FSS-A6	Met	Not Reviewed	CC-I/II	CC-I/II
FSS-B1	Not Met	Met	Met	Met
FSS-B2	CC-III	Not Reviewed	CC-III	CC-III FSS-B2-01
FSS-C1	CC-II	Not Reviewed	CC-II	CC-II
FSS-C2	CC-II/III	Not Reviewed	CC-II/III	CC-II/III
FSS-C3	CC-II/III	Not Reviewed	CC-II/III	CC-II/III
FSS-C4	CC-III	Not Reviewed	CC-III	CC-III
FSS-C5	Not met	CC-I/II	CC-I/II	CC-I/II
FSS-C6	CC-I/II	Not Reviewed	CC-I/II	CC-I/II
FSS-C7	Met	Not Reviewed	Met	Met
FSS-C8	Met	Not Reviewed	Met	Met
FSS-D1	Not Met	Met	Met	Met
FSS-D2	Met	Not Reviewed	Met	Met
FSS-D3	CC-I	CC-III	CC-III	CC-III
FSS-D4	Met	Not Reviewed	Met	Met
FSS-D5	CC-III	Not Reviewed	CC-III	CC-III
FSS-D6	Met	Not Reviewed	Met	Met
FSS-D7	CC-I	CC-I	CC-I	CC-I
FSS-D8	Met	Not Reviewed	Met	Met
FSS-D9	CC-I	CC-I	CC-I	CC-I
FSS-D10	CC-II/III	Not Reviewed	CC-II/III	CC-II/III
FSS-D11	Met	Not Reviewed	Met	Met
FSS-E1	Met	Not Reviewed	Met	Met
FSS-E2	Met	Not Reviewed	Met	Met
FSS-E3	Not met	CC-I	CC-I	CC-I

Table X-2 – HNP Summary of Evaluated Capability				
Fire Std SR	NRC Staff Review Results	Industry Peer Review Results	Status before Final F &O resolution	After F& O Resolution Status*
FSS-E4	N/A	N/A	N/A	NA
FSS-F1	Not Reviewed	CC-I/II	CC-I/II	CC-I/II
FSS-F2	Not Reviewed	CC-I	CC-I	CC-I
FSS-F3	Not Reviewed	Not Met	Not Met	Not Met FSS-F3-01
FSS-G1	Not Reviewed	Met	Met	Met
FSS-G2	Not Reviewed	Met	Met	Met
FSS-G3	Not Reviewed	Met	Met	Met
FSS-G4	Not Reviewed	CC-II	CC-II	CC-II
FSS-G5	Not Reviewed	N/A	N/A	NA
FSS-G6	Not Reviewed	CC-II/III	CC-II/III	CC-II/III
FSS-H1	Met	Not Reviewed	Met	Met
FSS-H2	CC-I	CC-II/III	CC-II/III	CC-II/III
FSS-H3	Met	Not Reviewed	Met	Met
FSS-H4	Met	Not Reviewed	Met	Met
FSS-H5	CC-I	CC-I	CC-I	CC-I
FSS-H6	CC-I	CC-I	CC-I	CC-I
FSS-H7	Met	Not Reviewed	Met	Met
FSS-H8	Not Met	Met	Met	Met
FSS-H9	Not Met	Met	Met	Met
FSS-H10	Met	Not Reviewed	Met	Met
IGN-A1	Met	Not Reviewed	Met	Met
IGN-A2	N/A	N/A	N/A	NA
IGN-A3	N/A	N/A	N/A	NA
IGN-A4	CC-I	CC-I	CC-I	CC-I
IGN-A5	Met	Not Reviewed	Met	Met
IGN-A6	N/A	N/A	N/A	NA
IGN-A7	Met	Not Reviewed	Met	Met
IGN-A8	CC-III	Not Reviewed	CC-III	CC-III

Table X-2 – HNP Summary of Evaluated Capability				
Fire Std SR	**NRC Staff Review Results**	**Industry Peer Review Results**	**Status before Final F &O resolution**	**After F& O Resolution Status***
IGN-A9	Met	Met	Met	Met
IGN-A10	CC-II	Not Reviewed	CC-II	CC-II
IGN-B1	Met	Not Reviewed	Met	Met
IGN-B2	Met	Not Reviewed	Met	Met
IGN-B3	Met	Not Reviewed	Met	Met
IGN-B4	N/A	N/A	N/A	NA
IGN-B5	Met	Not Reviewed	Met	Met
QNS-A1	The licensee did not perform quant screen. Element N/A.	QLS & QNS were not reviewed.	N/A	NA
QNS-B1	The licensee did not perform quant screen. Element N/A.	QLS & QNS were not reviewed.	N/A	NA
QNS-B2	The licensee did not perform quant screen. Element N/A.	QLS & QNS were not reviewed.	N/A	NA
QNS-C1	The licensee did not perform quant screen. Element N/A.	QLS & QNS were not reviewed.	N/A	NA
QNS-D1	The licensee did not perform quant screen. Element N/A.	QLS & QNS were not reviewed.	N/A	NA
QNS-D2	The licensee did not perform quant screen. Element N/A.	QLS & QNS were not reviewed.	N/A	NA
CF-A1	Met	Not Met	Met	CC-II with ASME inquiry
CF-A2	Met	Not Reviewed	Met	Met
CF-B1	Not Met	Met	Met	Met
HRA-A1	Met	Not Reviewed	Met	Met
HRA-A2	Met	Not Reviewed	Met	Met
HRA-B1	Met	Not Reviewed	Met	Met
HRA-B2	Not Met	Met	Met	Met
HRA-B3	Not Met	Met	Met	Met
HRA-C1	Not Met	Met	Met	Met

Table X-2 – HNP Summary of Evaluated Capability				
Fire Std SR	**NRC Staff Review Results**	**Industry Peer Review Results**	**Status before Final F &O resolution**	**After F& O Resolution Status***
HRA-D1	N/A	N/A	N/A	N/A
HRA-E1	Met	Not Reviewed	Met	Met
SF-A1	Not Reviewed	Not Met	Not Met	Met
SF-A2	Not Reviewed	Met	Met	Met
SF-A3	Not Reviewed	Met	Met	Met
SF-A4	Not Reviewed	Met	Met	Met
SF-A5	Not Reviewed	Met	Met	Met
SF-B1	Not Reviewed	Met	Met	Met
FQ-A1	Met	Not Reviewed	Met	Met
FQ-A2	Met	Not Reviewed	Met	Met
FQ-A3	Met	Not Reviewed	Met	Met
FQ-A4	Not Met	Met	Met	Met QF-4A-02
FQ-B1	Met	Not Reviewed	Met	Met
FQ-C1	Met	Not Reviewed	Met	Met
FQ-D1	Not Met	Met	Met	Met FQ-D1-01
FQ-E1	Not Met	Not Met	Not Met	Met FQ-E1-01
FQ-F1	Not Met	Not Met	Not Met	Met FQ-F1-01
FQ-F2	Not Met	Not Met	Not Met	Met
UNC-A1	Not Reviewed	Met	Met	Met UNC-A1-01
UNC-A2	Not Reviewed	Met	Met	Met
UNC-A3	Not Reviewed	Met	Met	Met
MU-A1	Met	Met	Met	Met
MU-A2	Met	Not Reviewed	Met	Met
MU-A3	Met	Not Reviewed	Met	Met
MU-B1	Met	Not Reviewed	Met	Met
MU-B2	Met	Not Reviewed	Met	Met
MU-B3	Met	Met	Met	Met
MU-B4	Not Met	Not Met	Not Met	Met

Table X-2 – HNP Summary of Evaluated Capability				
Fire Std SR	**NRC Staff Review Results**	**Industry Peer Review Results**	**Status before Final F &O resolution**	**After F& O Resolution Status***
MU-B5	Not Met	Not Met	Not Met	Met
MU-B6	Not Met	Not Met	Not Met	Met
MU-C1	Met	Not Reviewed	Met	Met
MU-D1	Met	Not Reviewed	Met	Met
MU-E1	Met	Not Reviewed	Met	Met
MU-F1	Met	Not Reviewed	Met	Met
MU-F2	Met	Not Reviewed	Met	Met

* Those F&O noted in far right column are the findings or suggestions not incorporated, but these do not impact the Fire PRA application. In general the issue is related to numerical statistical uncertainty analysis for PRA data elements, which does not include the fire model inputs that are the major source of uncertainty. The discussion and justification are provided in the response to the individual F&O below.

Pages X-19 through X-92 are SECURITY RELATED INFORMATION.

These pages are withheld under 10 CFR 2.390.