Enclosure 2 to AEP-NRC-2011-1

Transition Report with Attachments A through W

Indiana Michigan Power
Donald C. Cook Nuclear Plant Units 1 & 2
Docket Nos. 50-315 and 50-316

Transition to 10 CFR 50.48(c) – NFPA 805
Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, 2001 Edition

AEP
AMERICAN ELECTRIC POWER

Transition Report

Revision 0
June 29, 2011

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List of Acronyms and Abbreviations

Acronyms and abbreviations used in this letter are defined below. These and other acronyms and abbreviations may also be defined at their point of use in this letter.

ac	Alternating Current
ACP	Auxiliary Control Panel
ADAMS	Agency-wide Document Access and Management System
AEP	American Electric Power
AFW	Auxiliary Feedwater
AHJ	Authority Having Jurisdiction (NRC unless otherwise indicated)
ANS	American Nuclear Society
ANSI	American National Standards Institute
AOV	Air Operated Valve
APCSB	Auxiliary Power Conversion Systems Branch
ARP	Auxiliary Relay Panel
ASD	Alternative Shutdown
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
BAT	Boric Acid Tank
BIT	Boron Injection Tank
BTP	Branch Technical Position
BWR	Boiling Water Reactor
CC	Capability Category
CCDP	Conditional Core Damage Probability
CCW	Component Cooling Water
CDF	Core Damage Frequency
CEQ	Containment Air Recirculation/Hydrogen Skimmer
CFAST	Consolidated Model of Fire Growth and Smoke Transport
CFR	Code of Federal Regulations
CLB	Current Licensing Basis
cm^2	Square Centimeter
CNP	Donald C. Cook Nuclear Plant
CO2	Carbon Dioxide
CRID	Control Room Instrument Distribution cabinet
CRS	Control Room Supervisor
CST	Condensate Storage Tank
CTS	Containment Spray System
CVCS	Chemical and Volume Control System
dc, DC	Direct Current
DG	Diesel Generator
DHR	Decay Heat Removal
DID	Defense-In-Depth
EA	Engineering Analysis
EC	Engineering Change
ECP	Engineering and Control Procedure
EEEE	Existing Engineering Equivalency Evaluation
Ed.	Edition
El.	Elevation
EOP	Emergency Operating Procedure

List of Acronyms and Abbreviations (continued)

EPRI	Electric Power Research Institute
EPS	Emergency Power System
ERF	Emergency Response Facility
ERFBS	Electrical Raceway Fire Barrier System
ERO	Emergency Response Organization
ESFAS	Engineered Safety Features Actuation System
ESW	Essential Service Water
°F	Degrees Fahrenheit
F&Os	Findings and Observations
FACP	Fire Alarm Control Panel
FAQ	Frequently Asked Question
FDS	Fire Dynamics Simulator
FDT	Fire Dynamics Tool
FIVE	Fire Induced Vulnerability Evaluation
FLASH-CAT	Flame Spread over Horizontal Cable Trays
FPA	Foote, Pagni, and Alvares
FPP	Fire Protection Program
FPPM	Fire Protection Program Manual
FPRA	Fire Probabilistic Risk Assessment
FR	Federal Register
FRE	Fire Risk Evaluation
FSA	Fire Safety Analysis
FSAR	Final Safety Analysis Report
FZ	Fire Zone
ft.	Foot
GDC	General Design Criterion/Criteria as identified in 10 CFR 50 Appendix A
GL	Generic Letter
gpm	Gallons Per Minute
HEAF	High Energy Arcing Fault
HELB	High Energy Line Break
HEP	Human Error Probability
HGL	Hot Gas Layer
HRE	Higher Risk Evolution
HRR	Heat Release Rate
hr	Hour
HSS	High Safety Significant
HVAC	Heating, Ventilation, and Air Conditioning
IEEE	Institute of Electrical and Electronics Engineers
IEF	Initiating Event Frequency
I&M	Indiana Michigan Power Company (In this document, I&M is also used to refer to the previous names of the CNP licensee (i.e., Indiana and Michigan Electric Company, and Indiana and Michigan Power Company)
IMC	Inspection Manual Chapter
IN	Information Notice
in.	Inch
IPCEA	Insulated Power Cable Engineers Association
KSF	Key Safety Function

List of Acronyms and Abbreviations (continued)

LAR	License Amendment Request
LERF	Large Early Release Frequency
LFS	Limiting Fire Scenario
LOCA	Loss of Coolant Accident
LSI[x]	Local Shutdown Indication Cabinet [x]
MCB	Main Control Board
MCC	Motor Control Center
MCR	Main Control Room
MDAFW	Motor Driven Auxiliary Feed Water
MEFS	Maximum Expected Fire Scenario
MOV	Motor Operated Valve
MQH	McCaffrey, Quintiere, and Harkleroad
MS	Main Steam
MSIV	Main Steam Isolation Valve
MSO	Multiple Spurious Operation
N.E.	Northeast
NEI	Nuclear Energy Institute
NFPA	National Fire Protection Association
NPO	Non-Power Operation
NRC	U.S. Nuclear Regulatory Commission
NSCA	Nuclear Safety Capability Assessment
N.W.	Northwest
OMA	Operator Manual Action
ONS	Oconee Nuclear Station
PB	Performance-Based
PCS	Primary Control Station
PIC	Process Instrumentation Cabinet
PMG	Performance Monitoring Group
POS	Plant Operational State
PORV	Power-Operated Relief Valve
PRA	Probabilistic Risk Assessment
PSA	Probabilistic Safety Assessment
PSDC	Plant Specific Design Criterion/Criteria as identified in CNP UFSAR Section 1.4
PWR	Pressurized Water Reactor
QA	Quality Assurance
QAPD	Quality Assurance Program Description
RA	Recovery Action
RAB	Reactor Auxiliary Building
RAI	Request for Additional Information
RAW	Risk Achievement Worth
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RFC	Request for Change
RG	Regulatory Guide
RHR	Residual Heat Removal
RI	Risk-Informed
RI-PB	Risk-Informed, Performance-Based
RIS	Regulatory Issue Summary

List of Acronyms and Abbreviations (continued)

RP	Radiation Protection
RWST	Refueling Water Storage Tank
SE	Safety Evaluation
SER	Safety Evaluation Report
S.E.	Southeast
SFPE	Society of Fire Protection Engineers
SG	Steam Generator
SI	Safety Injection
SR	Supporting Requirement
SSC	Systems, Structures, and Components
SSA	Safe Shutdown Analysis
SSE	Safe Shutdown Earthquake
SSPS	Solid State Protection System
SSSA	Safe Shutdown Systems Analysis
SSCA	Safe Shutdown Capability Analysis
S.W.	Southwest
TDAFW	Turbine Driven Auxiliary Feed Water
TER	Technical Evaluation Report
T-H	Thermal-Hydraulic
TR	Transition Report
TRM	Technical Requirements Manual
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report
V&V	Verification and Validation
VAC	Volts Alternating Current
VCC	Valve Control Center
VCT	Volume Control Tank
VFDR	Variance from Deterministic Requirements
yr	Year
ZOI	Zone of Influence

Executive Summary

Indiana Michigan Power (I&M) will transition the Donald C. Cook Nuclear Plant (CNP) fire protection program to a new Risk-Informed, Performance-Based (RI-PB) alternative per 10 CFR 50.48(c) which incorporates by reference NFPA 805. The licensing basis per 10 CFR 50.48(b) and 10 CFR 50 Appendix R will be superseded.

I&M submitted the letter of intent in December 2005. The transition to the performance-based standard began in January 2006. The transition process consisted of a review and update of CNP documentation, including the development of a Fire Probabilistic Risk Assessment (PRA) using NUREG/CR 6850 as guidance. This TR summarizes the transition process and results. This TR contains information:

- Required by 10 CFR 50.48(c).
- Recommended by guidance document NEI 04-02 Revision 2and appropriate FAQs.
- Recommended by guidance document Regulatory Guide 1.205 Revision 1.

Sections 1, 2, and 3 of this TR provide, respectively, an introduction, an overview of the existing fire protection program, and a description of the transition process. Section 4 of the TR provides a summary of compliance with the following NFPA 805 requirements:

- Fundamental Fire Protection Program Elements and Minimum Design Requirements
- Nuclear Safety Performance Criteria, including:
  - Non-Power Operational Modes
  - Fire Risk Evaluations
- Radioactive Release Performance Criteria
- Monitoring Program
- Program Documentation, Configuration Control, and Quality Assurance

Section 5 of the TR provides regulatory evaluations and associated attachments, including:

- Changes to License Conditions
- Changes to TS, Orders, and Exemptions,
- Determination of No Significant Hazards and Evaluation of Environmental Considerations.

The attachments to the TR include detail to support the transition process and results.

Attachment H contains the approved FAQs not yet incorporated into the endorsed revision of NEI 04-02. These FAQs have been used to clarify the guidance in RG 1.205, NEI 04-02, and the requirements of NFPA 805 and, where applicable, used in the preparation of this LAR.

1.0 INTRODUCTION

The Nuclear Regulatory Commission (NRC) has promulgated an alternative rule for fire protection requirements at nuclear power plants, 10 CFR 50.48(c), which allows licensees to adopt National Fire Protection Association Standard 805 (NFPA 805). I&M is implementing the methodology identified in NEI 04-02, "Guidance for Implementing a Risk-informed, Performance-based Fire Protection Program Under 10 CFR 50.48(c)" to transition CNP from its current fire protection licensing basis to the new requirements as outlined in NFPA 805. This report describes the transition methodology utilized for the transition and documents how CNP complies with the new requirements.

1.1 Background

1.1.1 NFPA 805 – Requirements and Guidance

On July 16, 2004 the NRC amended 10 CFR 50.48, Fire Protection, to add a new subsection, 10 CFR 50.48(c), which establishes new Risk-Informed, Performance-Based (RI-PB) fire protection requirements. 10 CFR 50.48(c) incorporates by reference, with exceptions, the National Fire Protection Association's NFPA 805, Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants – 2001 Edition, as a voluntary alternative to 10 CFR 50.48 Section (b), Appendix R.

As stated in 10 CFR 50.48(c)(3)(i), any licensee's adoption of a RI-PB program that complies with the rule is voluntary. For operating nuclear power plants, this program may be adopted as an acceptable alternative method for complying with either 10 CFR 50.48(b), for plants licensed to operate before January 1, 1979, or the fire protection license conditions for plants licensed to operate after January 1, 1979.

NEI developed NEI 04-02 to assist licensees in adopting NFPA 805 and making the transition from their current fire protection program to a program based on NFPA 805. The NRC issued Regulatory Guide (RG) 1.205, Risk-Informed, Performance-Based Fire Protection for Existing Light Water Nuclear Power Plants, which endorses NEI 04-02, with exceptions, in December 2009.[1]

A depiction of the primary document relationships is shown in Figure 1-1:

[1] Where referred to in this document NEI 04-02 is Revision 2 and RG 1.205 is Revision 1.

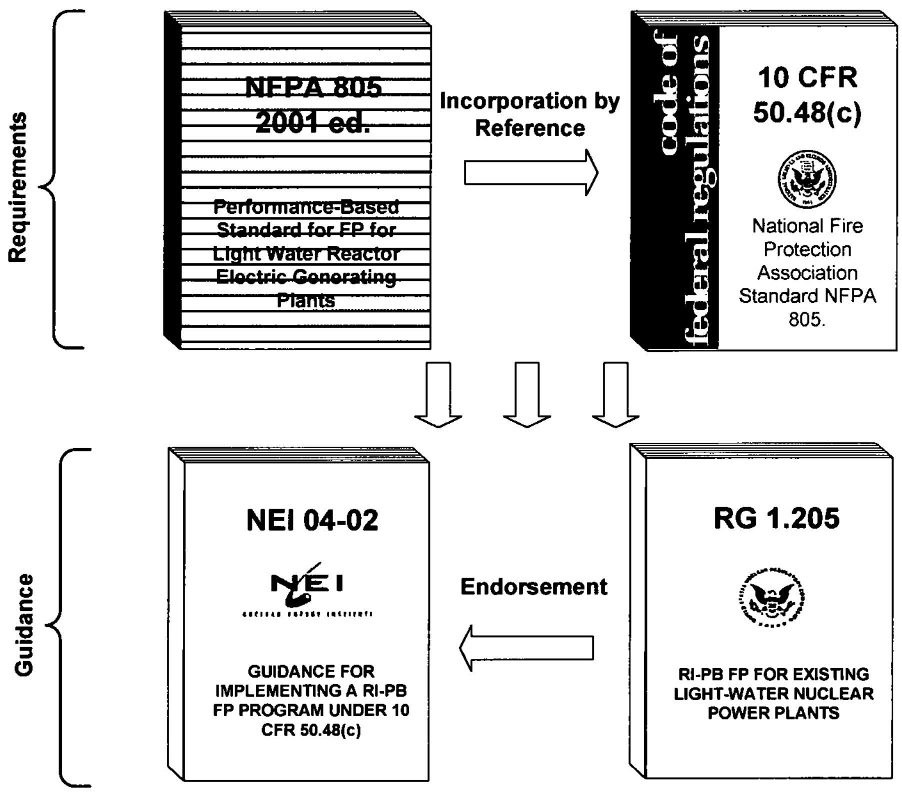

Figure 1-1 – NFPA 805 Transition – Implementation Requirements/Guidance

1.1.2 Transition to 10 CFR 50.48(c)

1.1.2.1 Start of Transition

I&M submitted a letter of intent to the NRC on December 28, 2005 (ML060090370) for CNP to adopt NFPA 805 in accordance with 10 CFR 50.48(c). In that letter of intent, I&M stated its understanding that the letter would initiate a period of enforcement discretion during which no enforcement actions would be taken for non-safety significant non-compliances discovered as a result of evaluations performed during the transition process.

By letter dated February 14, 2006 (ML060250675), the NRC acknowledged receipt of the letter of intent. The NRC letter stated that the CNP discretion period would begin on December 31, 2005 and expire on December 31, 2007.

The NRC granted a third year of enforcement discretion by Federal Register Notice 71 FR 19905 dated April 18, 2006. In accordance with NRC Enforcement Policy, the enforcement discretion period will continue until the NRC issuance of the SER.

By letter dated October 16, 2006, I&M requested an extension of the enforcement discretion period to December 31, 2008.

By letter dated January 4, 2007 (ML063330634) the NRC granted the request for an additional one year of enforcement discretion.

By letter dated September 10, 2008, the NRC published in the Federal Register (73 FR 52705) a revision to its Interim Enforcement Policy regarding enforcement discretion for certain fire protection issues, allowing licensees the option to request an extended enforcement discretion

period for submittal of a LAR if they are pursuing transition to 10 CFR 50.48(c). This revision states that an additional period of enforcement discretion may be granted on a case-by-case basis, if a licensee has made substantial progress in its transition effort. This additional period of enforcement discretion, if granted, would end six months after the date of the SE approving the second pilot plant LAR review. The enforcement discretion would continue in place, without interruption, until NRC issuance of the SER to transition to 10 CFR 50.48(c).

By letter dated September 29, 2008 (ML082820328), and in accordance with Federal Register Notice 73 FR 52705, I&M requested that enforcement discretion be extended for CNP until six months after the SE is issued for the second pilot plant.

By letter dated December 19, 2008 (ML083450002), the NRC staff reviewed I&M's request, and determined that the licensee had made sufficient progress in its transition to NFPA 805 to grant the additional enforcement discretion. Accordingly, the enforcement discretion period was extended until 6 months after the date of the SE approving the second pilot plant LAR.

1.1.2.2 Transition Process

The transition to NFPA 805 includes the following overall activities:

A new fire safe shutdown analysis is performed

A new Fire Probabilistic Risk Assessment (PRA) is prepared using NUREG/CR 6850, EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities, as guidance and a revision to the Internal Events PRA to support the Fire PRA

Activities are completed as required to transition the pre-transition Licensing Basis to 10 CFR 50.48(c) as specified in NEI 04-02 and RG 1.205

1.2 Purpose

The purpose of the TR is as follows:

1) Describe the process implemented to transition the current fire protection program to compliance with the additional requirements of 10 CFR 50.48(c);
2) Summarize the results of the transition process;
3) Explain the bases for conclusions that the fire protection program will comply with 10 CFR 50.48(c) requirements;
4) Describe the new fire protection licensing basis, and
5) Describe the configuration management processes used to manage post-transition changes to the station and the Fire Protection Program, and resulting impact on the Licensing Basis.

2.0 OVERVIEW OF THE EXISTING FIRE PROTECTION PROGRAM

2.1 Current Fire Protection Licensing Basis

CNP Unit 1 was licensed to operate on October 25, 1974 and CNP Unit 2 was licensed to operate on December 23, 1977. As a result, CNP has a fire protection program based on compliance with 10 CFR 50.48(a), 10 CFR 50.48(b), 10 CFR 50 Appendix R, BTP APCSB 9.5-1 Appendix A, and the following License Conditions.

Unit 1 License Condition, Docket No. 315, Renewed Facility Operating License Number DPR-58, through Amendment No. 312, Paragraph 2.C(4), states the following:

> Indiana Michigan Power Company shall implement and maintain, in effect, all provisions of the approved Fire Protection Program as described in the Final Safety Analysis Report for the facility and as approved in the SERs dated December 12, 1977, July 31, 1979, January 30, 1981, February 7, 1983, November 22, 1983, December 23, 1983, March 16, 1984, August 27, 1985, June 30, 1986, January 28, 1987, May 26, 1987, June 16, 1988, June 17, 1988, June 7, 1989, February 1, 1990, February 9, 1990, March 26, 1990, April 26, 1990, March 31, 1993, April 8, 1993, December 14, 1994, January 24, 1995, April 19, 1995, June 8, 1995, and March 11, 1996, subject to the following provision:
>
> The licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

Unit 2 License Condition, Docket No. 316, Renewed Facility Operating License Number DPR-74, through Amendment No. 295, Paragraph 2.C(3)(o), states the following:

> Indiana Michigan Power Company shall implement and maintain, in effect, all provisions of the approved Fire Protection Program as described in the Updated Final Safety Analysis Report for the facility and as approved in the SERs dated December 12, 1977, July 31, 1979, January 30, 1981, February 7, 1983, November 22, 1983, December 23, 1983, March 16, 1984, August 27, 1985, June 30, 1986, January 28, 1987, May 26, 1987, June 16, 1988, June 17, 1988, June 7, 1989, February 1, 1990, February 9, 1990, March 26, 1990, April 26, 1990, March 31, 1993, April 8, 1993, December 14, 1994, January 24, 1995, April 19, 1995, June 8, 1995, and March 11, 1996, subject to the following provision:
>
> The licensee may make changes to the approved fire protection program without prior approval of the Commission only if these changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

On June 20, 1995, I&M submitted an LAR to the NRC to remove requirements for fire protection from the operating license and the TS in accordance with NRC guidance in Generic Letters 86-10 and 88-12. This LAR was supplemented with a letter to the NRC dated December 19, 1995. On March 11, 1996, Amendment Nos. 208 and 192 to the Facility Operating Licenses for Units 1 and 2, respectively, were issued. These amendments relocated the fire protection TS, by reference, to the UFSAR and included the NRC's standard fire protection license condition.

2.2 NRC Acceptance of the Fire Protection Licensing Basis

A brief summary of each NRC SER and exemption identified in the Unit 1 and the Unit 2 Fire Protection License Conditions is provided below. Any provisions of these documents that are to be transitioned to the NFPA 805 fire protection program are identified in other sections and/or attachments to this TR.

Amendment No. 22 for CNP Unit No. 1 Dated December 12, 1977

This amendment incorporated Fire Protection TS for existing fire protection equipment and added administrative controls related to fire protection at CNP. Amendment 22 and its associated SER were revised by the NRC in a letter dated January 16, 1978. Three errors, of a minor administrative nature, were included in the Fire Protection TS. The errors were omission of a footnote, which denotes the fire pumps in the fire suppressions system are shared between the CNP units, the addition of a surveillance requirement for fire detection systems which is not the appropriate requirement for the NFPA Class B supervised circuits at CNP, and the omission of Paragraph 6.5.2.9 in the Administrative Controls Section.

Amendment No. 25 for CNP, Unit No. 1 Dated May 30, 1978

Included in this amendment was a Technical Specification change to initial implementation of certain fire protection surveillance activities inadvertently left out of License Amendment No. 22.

Amendment Nos. 31 and 12 for CNP Units 1 and 2, Respectively, Dated July 31, 1979

These amendments were based on a review of I&M's proposed Fire Protection Program as described in: (1) I&M's response to Appendix A of BTP APCSB 9.5-1, dated January 31, 1977; (2) the CNP Units 1 and 2 FHA, Revision 0, dated March 31, 1977; and (3) I&M's responses to NRC requests for additional information and staff positions dated August 19, 1977, September 30, 1977, October 27, 1977, November 22, 1977, February 3, 1978, June 12, 1978, and August 16, 1978.

Amendment Nos. 44 and 26 for CNP Units 1 and 2, Respectively, Dated January 30, 1981

These amendments revised the CNP Fire Protection TS to reflect modifications made to CNP and administratively revised the TS index to add environmental qualifications.

Amendment Nos. 68 and 50 for CNP Units 1 and 2, Respectively, Dated February 7, 1983

This amendment and associated SER consisted of changes to the Technical Specification as a partial response to an application by I&M dated August 2, 1982 (supplemented by letters dated November 23, 1982 and December 30, 1982). The amendment changed the TS to allow a roving fire watch patrol in areas affected when automatic CO_2 fire suppressions systems are temporarily isolated.

Alternate Safe Shutdown Method SER Dated November 22, 1983

The NRC reviewed the alternate safe shutdown method as presented by I&M in the March 27, 1981, March 31, 1983, and August 23, 1983, submittals. The SER documented the results of the NRC review and acceptance of the alternate shutdown methods. The SER also required I&M to submit the final alternate shutdown procedures for NRC review and the TS to be implemented for alternate shutdown. I&M provided the procedure to the NRC by letter dated June 6, 1986. An NRC SER dated January 28, 1987 included the review of the procedure submittal.

Section III.G and III.O SER Dated December 23, 1983

Exemptions were requested from certain requirements of 10 CFR 50 Appendix R, Sections III.G and III.O by I&M letters dated December 30, 1982, March 31, 1983, and August 22, 1983. The SER accepted the exemptions provided certain administrative controls were maintained. Consequently, CNP operates in compliance with 10 CFR 50 Appendix R, Sections III.G and III.O, without making physical modifications for the specific items discussed. The NRC granted the exemption and stated that "The exemptions are contingent upon the licensee's maintenance of administrative control of transient combustibles which are equivalent to those specified in Section III.K.1 through III.K.8 of Appendix R to 10 CFR 50 and any characterization of transient combustibles or design features which are specifically discussed in our Safety Evaluation (SE)." The NRC also noted the schedular requests for exemption from 10 CFR 50.48(c) with respect to Sections III.G and III.J of Appendix R.

Amendment Nos. 79 and 61 for CNP Units 1 and 2, Respectively, Dated March 16, 1984

These amendments revised the TS for fire protection systems to incorporate the updated and revised wording of the standardized TS for Westinghouse plants and to substitute the use of the closed circuit television in the lower containment in place of a continuous fire watch whenever the reactor coolant pump sprinklers are inoperable.

Seismic Gap, Ventilation Ductwork, Unrated Hatches SER Dated August 27, 1985

Letters from I&M to the NRC dated March 8 and June 15, 1984, requested exemptions from the requirements of 10 CFR 50 Appendix R. Additional information was provided in I&M letters dated June 15, June 27, and August 13, 1984. Specifically, the requests were related to hatch covers, seismic gaps, and ventilation duct penetrations. The NRC clearly indicated that, for CNP, fire area boundary requirements are contained within BTP 9.5-1, Appendix A and not 10 CFR 50 Appendix R, and as such are deviations, not exemptions.

The evaluation accepted the deviations for the Auxiliary Building ventilation duct penetrations and the Containment and Auxiliary Building seismic gaps for numerous fire areas. Deviations from BTP 9.5-1 Appendix A were not approved for the non-fire rated hatch covers in numerous fire areas and the NRC expected additional information on these hatches from I&M. This additional information was provided in letters dated May 30, 1986, October 16, 1987, and May 10, 1988. The non-fire rated hatch cover deviations were approved by the NRC by SER dated August 27, 1985.

Amendment Nos. 97 and 84 for CNP Units 1 and 2 Respectively, Dated June 30, 1986

These amendments revised the Fire Protection TS by changing the automatic actuation of the HVAC charcoal filter fire protection systems to manual actuation.

Appendix R Safe Shutdown Procedure SER Dated January 28, 1987

The SER was based upon I&M's response to the outstanding issues identified in the staffs SER dated November 22, 1983. The SER endorsed the TER performed by Brookhaven National Laboratory on CNP's alternate shutdown capability for Units 1 and 2.

Section III.J SER Dated May 26, 1987

I&M submitted an exemption request on March 6, 1987, for relief from emergency lighting requirements in the outdoor yard area. I&M presented a discussion regarding the equivalency of the security diesel generator lighting to 8-hour battery powered lighting for this area. The NRC granted the exemption request as documented in an SER Dated May 26, 1987.

Control Room Carpet SER Dated June 16, 1988

This SER addressed the installation of new control room carpeting that had a higher rating than the minimum 0.45 watts/cm^2 used to define Class I interior finish requirements per NFPA 101, "Life Safety Code." The SER also addressed the change in NRC acceptance criteria from that of flame spread rating per NFPA 255 to that of critical radiant heat flux per NFPA 253.

Unrated Fire Hatches SER Dated June 17, 1988

This SER accepted the deviation from the requirement of Section D.1.j of Appendix A to BTP APCSB 9.5-1. The staff concluded that the acceptance criteria for the exemption requested for these hatches fell under BTP APCSB 9.5-I Appendix A versus 10 CFR 50 Appendix R and modified this exemption request to be a deviation request.

SER on the Technical Evaluation Report on CNP Internal Conduit Seal Program Dated June 7, 1989

This SER was written to provide acceptance to a more stringent internal conduit sealing program. In an October 20, 1988, letter to the NRC, I&M identified the commitment for CNP regarding internal conduit sealing. In a meeting with the NRC on November 1 and 2, 1989 at CNP, I&M's internal conduit sealing program and commitments and how it differs from the SER requirements were explained. Based on this meeting, the NRC agreed that this SER as previously written should not apply. This SER was subsequently superseded by an April 26, 1990 SER. The April 1990 SER, Item 2.18.2, states that the internal conduit sealing program delineated in I&M's October 20, 1988 letter is consistent with the guidance provided in Appendix A to BTP APCSB 9.5-I and is, therefore, acceptable.

Amendment Nos. 130 and 115 for CNP Units 1 and 2 Respectively, Dated February 8, 1990

The amendments consist of changes to the TS in response to I&M application dated February 6, 1989 and supplemented on November 10, 1989. These amendments modified the fire protection TS for Unit 1 and Unit 2. The changes included deletion of special reporting requirements and modification of the action statements to provide alternatives other than establishing a fire watch if a fire detection or suppression system is out of service.

Amendment Nos. 131 and 116 for CNP Units 1 and 2 Respectively, Dated February 9, 1990

These amendments consisted of changes to CNP TS in response to I&M's submittals dated May 30, 1986, as further clarified in an I&M submittal dated June 23, 1986, and I&M submittals dated February 25, March 2, and June 16, 1988, and January 23, 1989. These amendments require portions of the systems used to achieve safe shutdown (following a fire) via crossties to be operable regardless of the unit's operating status, as long as the opposite unit is in Mode 1, 2, 3 or 4 (except for the Auxiliary Feed Water system which is not required to be operable in Mode 4).

Amendment Nos. 133 and 118 for CNP Units 1 and 2 Respectively, Dated March 26, 1990

These amendments consisted of changes to the TS in response to an I&M application dated February 25, 1988. These amendments deleted Specification 6.4.2 which required compliance with Section 27 of the 1976 Edition of the NFPA Code associated with Fire Brigade Training being conducted on a quarterly basis.

Post-Fire Safe Shutdown Methodology Unresolved Issues SER Dated April 26, 1990

This SER addressed the 25 open items associated with I&M's February 21, 1990 letter to the NRC. In addition, this SER approved I&M's internal conduit seal program as described in a letter to the staff dated October 20, 1988.

Amendment Nos. 171 and 154 for CNP Units 1 and 2 Respectively, Dated March 31, 1993

These amendments reflected the installation of new fire water storage tanks, fire pumps, and associated components and controls.

Amendment Nos. 172 and 155 for CNP Units 1 and 2 Respectively, Dated April 8, 1993

These amendments changed the number of containment thermistor fire detectors listed in Tables 3.3-1 0 and 3.3-1 1 of Unit 1 TS 3.3.3.7 and Unit 2 TS 3.3.3.8, "Fire Detection Instrumentation," respectively.

Revision to Technical Specification Bases Reflecting Change to Fire Suppression Water Source Dated December 14, 1994

This SER addressed the revision to the Bases section 3/4.7.9 of the TS. The revision deleted reference to the screenhouse fire pumps as a backup water source for the fire suppression system.

NFPA Code Review and Related Appendix R SER Clarifications Dated January 24, 1995

This SER contained an assessment of item 2.3.1 of the NRC's May 20, 1990 SER, based upon information provided by I&M to the NRC in a letter dated December 2, 1991. In this letter, I&M stated that there were inconsistencies between the SER and the as-installed fire alarm systems at CNP. This SER addressed the acceptability of unsupervised fire alarm control panels.

Amendment Nos. 194 and 180 for CNP Units 1 and 2 Respectively, Dated April 19, 1995

These amendments deleted part of License Condition 2.C.(4) of the Unit 1 Operating License and License Condition 2.C.(3)(o) of the Unit 2 Operating License. Three modifications listed in Table 1 of the SER of July 31, 1979, that supported amendments numbers 31 and 12 to the Unit 1 and Unit 2 Operating Licenses, respectively, were also changed.

Fire Alarm System Reflash Commitment Dated June 8, 1995

This SER addressed the withdrawal of a previous I&M commitment to install a fire alarm system reflash capability in the control room at CNP. This SER was based upon information provided by I&M in a letter to the NRC dated August 24, 1994.

Relocation of Fire Protection TS Dated March 11, 1996

On July 20, 1995, I&M submitted an LAR to the NRC to remove requirements for fire protection from the operating license and the TS in accordance with NRC guidance in Generic Letters 86-10 and 88-12. This LAR was supplemented with an I&M letter to the NRC dated December 19, 1995. On March 11, 1996, Amendment Nos. 208 and 192 to the Facility Operating Licenses for Units I and 2, respectively, were issued.

NRC SER Dated January 19, 2001

This SER addressed the reduction in the flash point of the RCP lubrication oil and concluded that the change in the RCP lubrication oil flash point does not alter the conclusions reached by the staff in granting the original exemption from Section III.O of Appendix R to 10 CFR Part 50.

Exemptions

The following is a list of the exemptions that have been granted by the NRC from the requirements of Appendix R to 10CFR50, Section III.G, J and O:

- Exemption Request from the lack of automatic suppression for Fire Zone 1, RHR/CTS Pump Area, Auxiliary Building, Elevation 573 feet. (NRC SER Dated December 23, 1983)
- Exemption Request for the lack of fixed suppression for Fire Zone 14, Transformer Room, Elevation 591 feet, Unit 1 (NRC SER Dated December 23, 1983)
- Exemption Request for the lack of fixed suppression for Fire Zone 20, Transformer Room, Elevation 591 feet, Unit 2 (NRC SER Dated December 23, 1983)
- Exemption Request for the lack of fixed suppression for Fire Zones 29A,B,E, Unit 1 ESW Pumps and MCCs (NRC SER Dated December 23, 1983)
- Exemption Request for the lack of fixed suppression for Fire Zones 29C,D,F, Unit 2 ESW Pumps and MCCs (NRC SER Dated December 23, 1983)
- Exemption Request for the lack of automatic suppression for Fire Zone 29G, Circulating Water Pump MCC Room, Elevation 575 feet, both units (NRC SER Dated December 23, 1983)
- Exemption Request for the lack of fixed suppression for Fire Zones 33, 33A, and 33B, Unit I East Main Steam Valve Enclosure (NRC SER Dated December 23, 1983)
- Exemption Request for the lack of fixed suppression for Fire Zones 34, 34A and 34B, Unit 2 East Main Steam Valve Enclosure (NRC SER Dated December 23, 1983)
- Exemption Request for the lack of 3-Hour rated barrier between redundant CCW Systems in Fire Zone 44S, Auxiliary Building South, elevation 609 feet, both units (NRC SER Dated December 23, 1983)
- Exemption Request for the lack of fixed suppression for Fire Zone 53, Unit 1 Control Room (NRC SER Dated December 23, 1983)
- Exemption Request for the lack of fixed suppression for Fire Zone 54, Unit 2 Control Room (NRC SER Dated December 23, 1983)
- Exemption Request for the requirements of Section III.O, Reactor Coolant Pump Oil Collection System (NRC SERs Dated December 23, 1983 and January 19, 2001)
- Exemption Request for the requirements of Section III.J, Emergency Lighting (NRC SER Dated May 26, 1987)

3.0 TRANSITION PROCESS

3.1 Background

Section 4.0 of NEI 04-02 describes the process for transitioning from compliance with the current fire protection licensing basis to the new requirements of 10 CFR 50.48(c). NEI 04-02 contains the following steps:

1. Licensee determination to transition the licensing basis and devote the necessary resources;
2. Submission of a letter of intent to the NRC stating the licensee's intention to transition the licensing basis in accordance with a tentative schedule;
3. Conduct the transition process to determine the extent to which the current fire protection licensing basis supports compliance with the new requirements and the extent to which additional analyses, plant and program changes, and alternative methods and analytical approaches are needed;
4. Submission of an LAR;
5. Completion of transition activities that can be completed prior to the receipt of the License Amendment;
6. Receipt of an SE; and
7. Completion of implementation of the new licensing basis, including completion of any modifications identified in Attachment S.

3.2 NFPA 805 Process

Section 2.2 of NFPA 805 establishes the general process for demonstrating compliance with NFPA 805. This process is illustrated in Figure 3-1. It shows that, except for the fundamental fire protection requirements, compliance can be achieved on a fire area basis either by deterministic or RI-PB methods. Consistent with the guidance in NEI 04-02, I&M has implemented the NFPA 805 Section 2.2 process by first determining the extent to which its current fire protection program supports findings of deterministic compliance with the requirements in NFPA 805. RI-PB methods are being applied to the requirements for which deterministic compliance could not be shown.

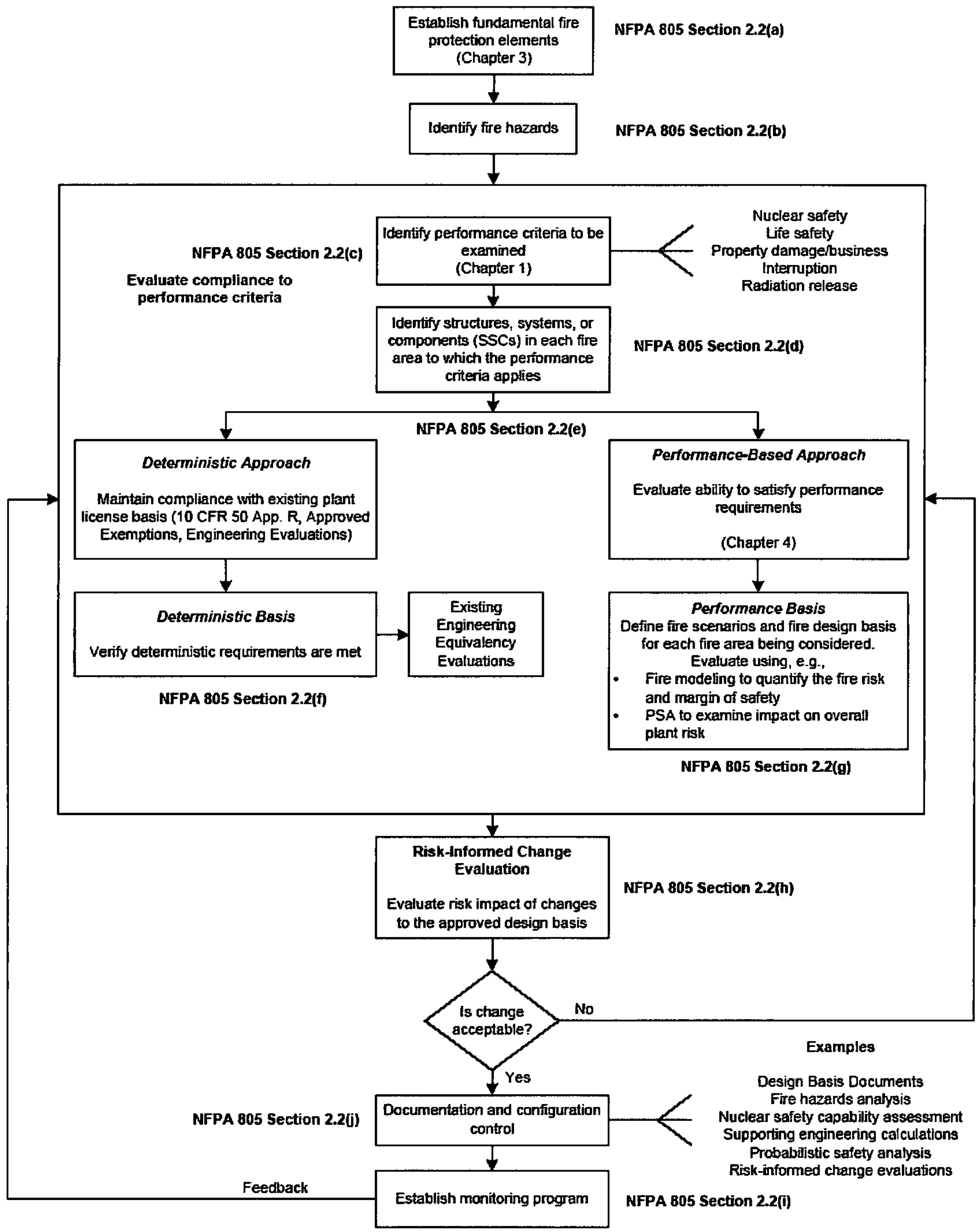

Figure 3-1 – NFPA 805 Process (NEI 04-02 Figure 3-1 based on NFPA 805 Figure 2.2)[2]

[2] Note: 10 CFR 50.48(c) does not incorporate by reference Life Safety and Plant Damage/Business Interruption goals, objectives and criteria. See 10 CFR 50.48(c) for specific exceptions to the incorporation by reference of NFPA 805.

3.3 NEI 04-02 NFPA 805 Transition Process

NFPA 805 contains technical processes and requirements for an RI-PB fire protection program. NEI 04-02 was developed to provide guidance on the overall process (programmatic, technical, and licensing) of the transition from a traditional fire protection licensing basis to a new one based upon NFPA 805, as shown below in Figure 3-2.

Section 4.0 of NEI 04-02 describes the detailed process for assessing a fire protection program for compliance with NFPA 805, as shown below in Figure 3-2.

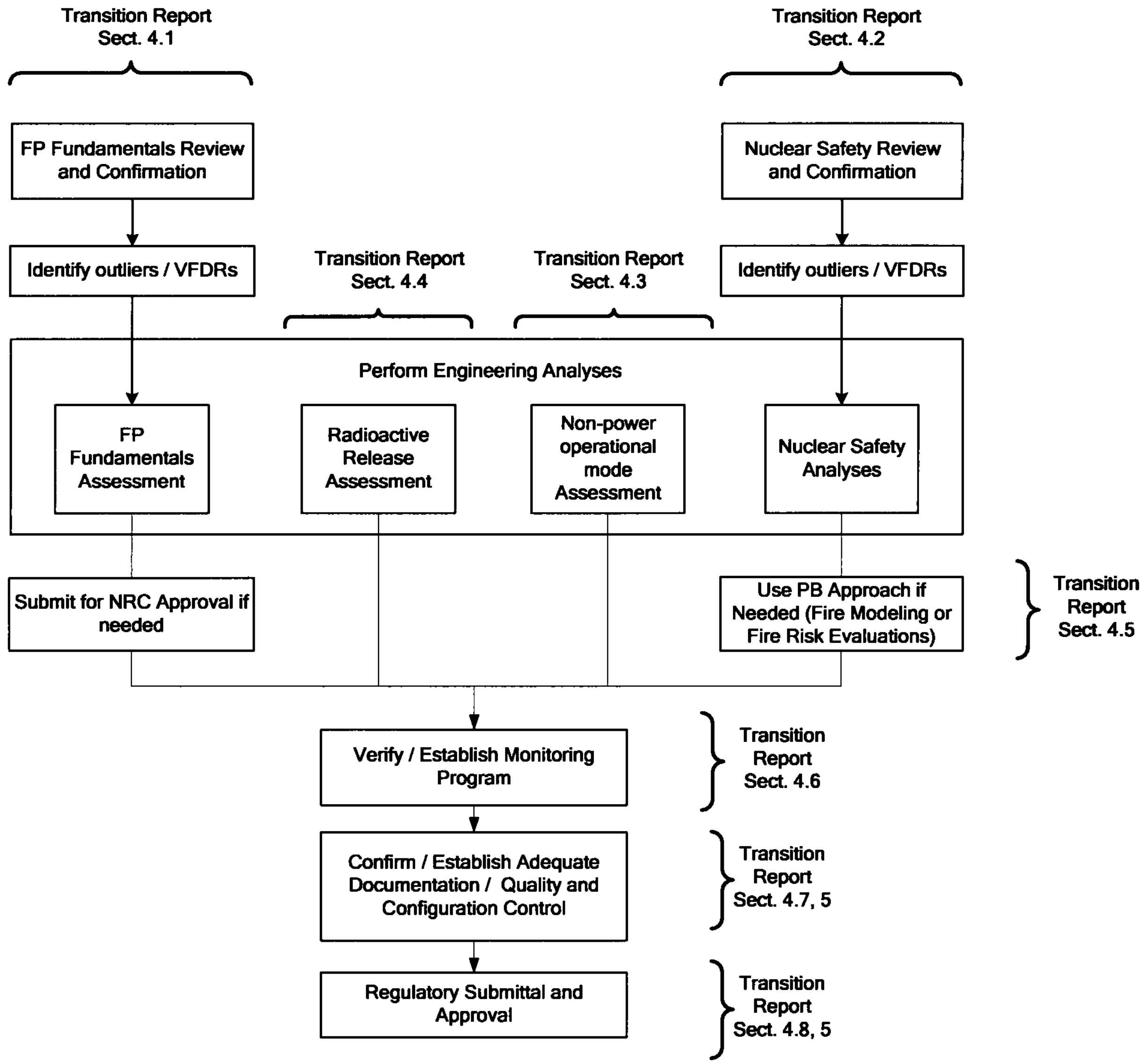

Figure 3-2 – Transition Process (Simplified) (based on NEI 04-02 Figure 4-1)

3.4 NFPA 805 Frequently Asked Questions

The NRC has coordinated with the NEI and two pilot plants (Oconee Nuclear Station and Shearon Harris Nuclear Power Plant) to define the licensing process for transitioning to a new licensing basis under 10 CFR 50.48(c) and NFPA 805. Both the NRC and the industry recognized the need for additional clarifications to the guidance provided in RG 1.205, NEI 04-02, and the requirements of NFPA 805. The NFPA 805 FAQ process was jointly developed by NEI and NRC to facilitate timely clarifications of NRC positions. This process is described in a letter from the NRC dated July 12, 2006, to NEI (ML061660105) and in Regulatory Issues Summary (RIS) 2007-19, Process for Communicating Clarifications of Staff Positions Provided in RG 1.205 Concerning Issues Identified during Pilot Application of NFPA Standard 805, dated August 20, 2007 (ML071590227).

Under the FAQ Process, transition issues are submitted to the NEI NFPA 805 Task Force for review, and subsequently presented to the NRC during public FAQ meetings. Once the NEI NFPA 805 Task Force and NRC reach agreement, the NRC issues a memorandum to indicate that the FAQ is acceptable. NEI 04-02 is subsequently revised to incorporate the approved FAQs. This is an on-going revision process that will continue through the transition of NFPA 805 transition plants. Final closure of the FAQs will occur when future revisions of RG 1.205, endorsing the related revisions of NEI 04-02, are approved by the NRC. It is expected that additional FAQs will be written and existing FAQs will be revised as plants continue NFPA 805 transition following issuance of the pilot plant SEs.

Attachment H contains the list of approved FAQs not yet incorporated into the endorsed revision of NEI 04-02. These FAQs have been used, as applicable, to clarify the guidance in RG 1.205, NEI 04-02, and the requirements of NFPA 805 and in the preparation of this LAR.

4.0 COMPLIANCE WITH NFPA 805 REQUIREMENTS

4.1 Fundamental Fire Protection Program and Design Elements

The Fundamental FPP and Design Elements are established in Chapter 3 of NFPA 805. Section 4.3.1 of NEI 04-02 provides a systematic process for determining the extent to which the pre-transition licensing basis and plant configuration meet these criteria and for identifying the FPP changes that would be necessary for compliance with NFPA 805. NEI 04-02 Appendix B-1 provides guidance on documenting compliance with the program requirements of NFPA 805 Chapter 3.

4.1.1 Overview of Evaluation Process

The comparison of the existing CNP FPP to the requirements of NFPA 805 Chapter 3 was performed and documented in CNP Technical Evaluation 12.28, "NFPA 805 Chapter 3 Fundamental Fire Protection Program and Design Elements Review." The review used the guidance contained in NEI 04-02, Section 4.3.1 and Appendix B-1 (See Figure 4-1).

Each section and subsection of NFPA 805 Chapter 3 was reviewed to determine if the current CNP FPP complied with the section or subsection. The NFPA 805 Chapter 3 sections and subsections are listed in the "NFPA 805 Elements" column of Table B-1 provided as Attachment A to this TR. The text of the NFPA 805 Chapter 3 section or subsection is presented in the "NFPA 805 Requirement" column of Table B-1. As shown in Table B-1, one or more of the following "Compliance Statements" was assigned to the NFPA 805 Chapter 3 section or subsection:

- "Complies" was assigned to those NFPA 805 sections/subsections determined to be met by the existing CNP FPP.
- "Complies with Clarification" was assigned to those NFPA 805 Chapter 3 sections/subsections determined to be met by the existing CNP FPP with the NFPA 805 Chapter 3 requirement clarified as stated in the "Compliance Basis" column of the table.
- "Complies by previous NRC approval" was assigned to those NFPA 805 Chapter 3 sections/subsections that are not met by the existing CNP FPP, but previous NRC approval of the associated CNP configuration exists.
- "Complies with use of EEEEs" was assigned to those NFPA 805 Chapter 3 sections/subsections determined to be met the by the existing CNP FPP through the use of EEEEs showing equivalency to the NFPA 805 requirement(s).
- "Submit for NRC Approval" was assigned to those NFPA 805 Chapter 3 sections/subsections for which approval is requested to use performance based methods to establish compliance in accordance with 10 CFR 50.48(c)(2)(vii) as detailed in Attachment L to this TR.
- "Complies with Required Action" was assigned to those NFPA 805 Chapter 3 sections/subsections determined to be met by the CNP FPP after completion of an action, to be completed after submittal of the NFPA 805 LAR.

The "Compliance Basis" column in Table B-1 provides details regarding above defined Compliance Statements. In some cases multiple Compliance Statements were assigned to a specific NFPA 805 Chapter 3 section/subsection. Where this is the case, the Compliance Basis clearly delineates the aspects of the basis statement that correspond to the Compliance Statement. The "Reference Document" column in Table B-1 identifies the CNP documents that establish compliance with the indicated NFPA 805 Chapter 3 section/subsection at the time that

this amendment request is submitted to the NRC. Specific CNP documents will be made available to NRC personnel upon request.

4.1.2 Results of the Evaluation Process

4.1.2.1 NFPA 805 Chapter 3 Requirements Met or Previously Approved by the NRC

Attachment A contains the NEI 04-02 Table B-1, Transition of Fundamental Fire Protection Program and Design Elements for CNP. This table provides the compliance basis for the requirements in NFPA 805 Chapter 3. Except as identified in Section 4.1.2.3, Attachment A demonstrates that the fire protection program at CNP either:

- Complies directly with the requirements of NFPA 805 Chapter 3,
- Complies with clarification with the requirements of NFPA 805 Chapter 3,
- Complies through the use of EEEEs which are valid and of appropriate quality,
- Complies with a previously NRC approved alternative to NFPA 805 Chapter 3 and therefore the specific requirement of NFPA 805 Chapter 3 is supplanted, or
- Complies upon the completion of a required action. Implementation items are identified for those sections and/or subsections determined to meet the specific requirements of NFPA 805 after the completion of a modification or other action, such as a procedure change or a work request. (See Attachment S for details).

4.1.2.2 NFPA 805 Chapter 3 Requirements Requiring Clarification of Prior NRC Approval

NFPA 805 Section 3.1 states in part, "Previously approved alternatives from the fundamental protection program attributes of this chapter by the AHJ take precedence over the requirements contained herein." In some cases prior NRC approval of an NFPA 805 Chapter 3 program attribute may be unclear. CNP requests that the NRC concur with their finding of prior approval for the following sections of NFPA 805 Chapter 3:

- None.

4.1.2.3 NFPA 805 Chapter 3 Requirements Not Previously Approved by NRC

The following section of NFPA 805 Chapter 3 is not specifically met nor does previous NRC approval of alternatives exist:

- 3.5.16 – Approval is requested for the use of fire protection water for non-fire protection uses.

The specific deviation and a discussion of how the alternative satisfies 10 CFR 50.48(c)(2)(vii) requirements is provided in Attachment L. CNP requests NRC approval of this performance-based method.

4.1.3 Definition of Power Block and Plant

Where used in NFPA 805 Chapter 3 the terms "Power Block" and "Plant" refer to structures that contain equipment required for nuclear plant operations, such as Containment, Auxiliary Building, Service Building, Control Building, Fuel Building, Radioactive Waste Building, Water Treatment Building, Turbine Building, and intake structures or structures that are identified in the facility's pre-transition licensing basis.

These structures are listed in Attachment I and define the "power block" and "plant".

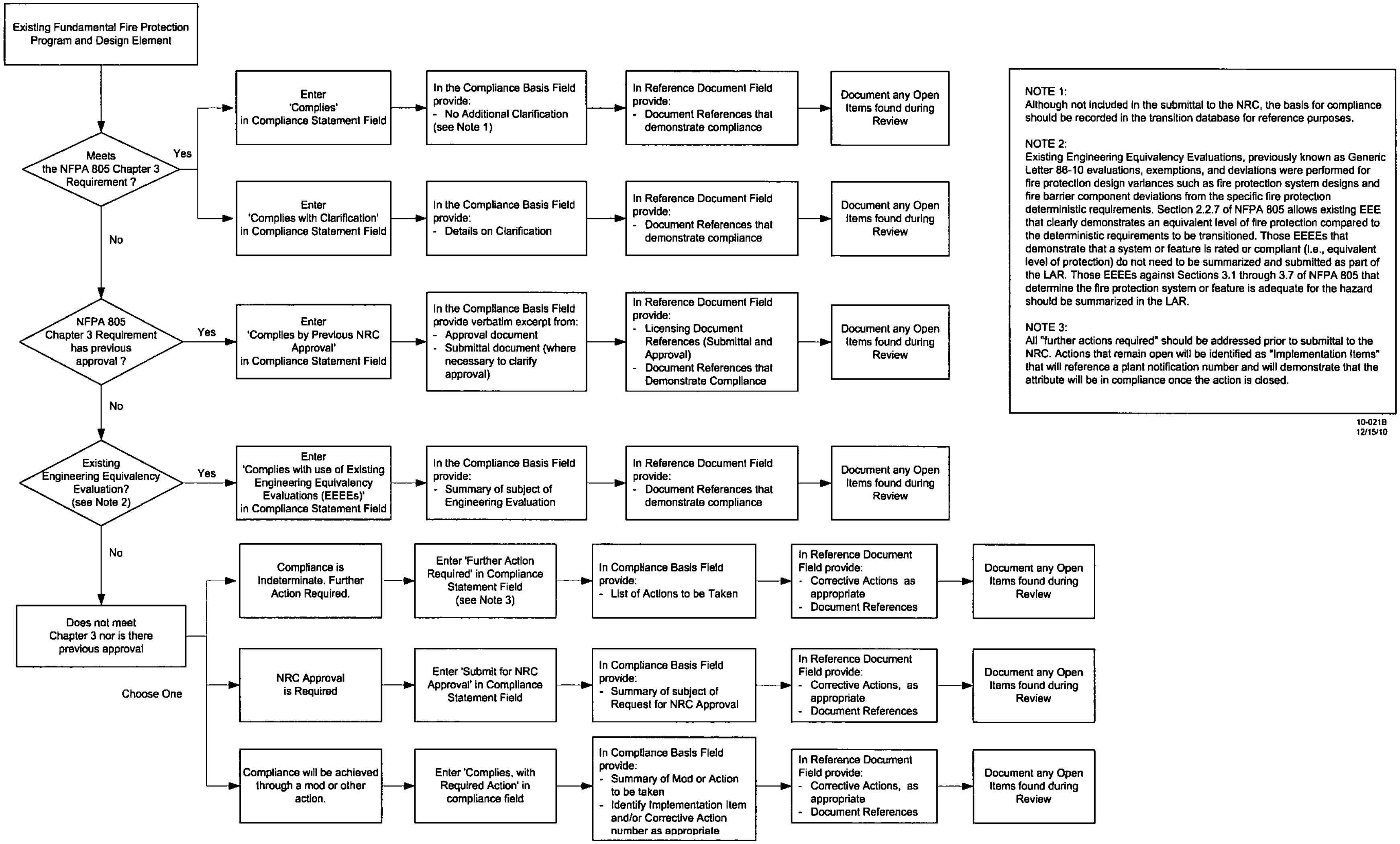

Figure 4-1 – Fundamental Fire Protection Program and Design Elements Transition Process (based on NEI 04-02 Figure 4-2)[3]

[3] Figure 4-1 depicts the process used during the transition and therefore contains elements (i.e., open items) that represent interim resolutions. Additional detail on the transition of EEEEs is included in Section 4.2.2.

4.2 Nuclear Safety Performance Criteria

The Nuclear Safety Performance Criteria are established in Section 1.5 of NFPA 805. Chapter 4 of NFPA 805 provides the methodology to determine the fire protection systems and features required to achieve the performance criteria outlined in Section 1.5. Section 4.3.2 of NEI 04-02 provides a systematic process for determining the extent to which the pre-transition licensing basis meets these criteria and for identifying any necessary fire protection program changes. NEI 04-02, Appendix B-2 provides guidance on documenting the transition of Nuclear Safety Capability Assessment Methodology and the Fire Area compliance strategies.

4.2.1 Nuclear Safety Capability Assessment Methodology

The NFPA 805 NSCA Methodology review consists of four processes:

- Establishing compliance with NFPA 805 Section 2.4.2
- Establishing the Safe and Stable Conditions for the Plant
- Establishing Recovery Actions
- Evaluating Multiple Spurious Operations

The methodology for demonstrating reasonable assurance that a fire during NPO modes will not prevent the plant from achieving and maintaining the fuel in a safe and stable condition is an additional requirement of 10 CFR 50.48(c) and is addressed in Section 4.3.

4.2.1.1 Compliance with NFPA 805 Section 2.4.2

Overview of Process

NFPA 805 Section 2.4.2 Nuclear Safety Capability Assessment states:

"The purpose of this section is to define the methodology for performing a nuclear safety capability assessment. The following steps shall be performed:

(1) Selection of systems and equipment and their interrelationships necessary to achieve the nuclear safety performance criteria in Chapter 1

(2) Selection of cables necessary to achieve the nuclear safety performance criteria in Chapter 1

(3) Identification of the location of nuclear safety equipment and cables

(4) Assessment of the ability to achieve the nuclear safety performance criteria given a fire in each fire area"

The NSCA methodology review evaluated the existing Appendix R post-fire SSA methodology against the guidance for transitioning to NFPA 805 provided in NEI 00-01 Revision 1 Chapter 3, "Deterministic Methodology," as discussed in Appendix B-2 of NEI 04-02. The methodology used is depicted in Figure 4-2 and consisted of the following activities:

- Each specific section of NFPA 805 2.4.2 was correlated to the corresponding section of Chapter 3 of NEI 00-01 Revision 1. Based upon the content of the NEI 00-01 methodology statements, a determination was made of the applicability of the section to the station.

- The plant-specific methodology was compared to applicable sections of NEI 00-01 and one of the following potential alignment statements and its associated basis were assigned to the section:
  - Aligns
  - Aligns with intent
  - Not in Alignment
  - Not in Alignment, but Prior NRC Approval
  - Not in Alignment, but no adverse consequences

The comparison of the CNP existing Appendix R post-fire SSA methodology to NEI 00-01 Chapter 3 (NEI 04-02 Table B-2) for transitioning to NFPA 805 was performed and documented in CNP Technical Evaluation 12.29, Nuclear Safety Capability Analysis Methodology Review.

Results from Evaluation Process

The method used to perform the existing Appendix R post-fire SSA with respect to selection of systems and equipment, selection of cables, and identification of the location of equipment and cables, either meets the NRC endorsed guidance for transitioning to NFPA 805 directly or met the intent of the endorsed guidance with adequate justification as documented in Attachment B. However, documentation enhancements to support conclusions to NEI 00-01, Section 3.5.2.1 regarding open circuit on current transformers are ongoing. These enhancements require additional CT manufacturer and model data that was not available at time of the LAR submittal and will be addressed prior to the implementation of the new NFPA 805 licensing basis (Attachment S).

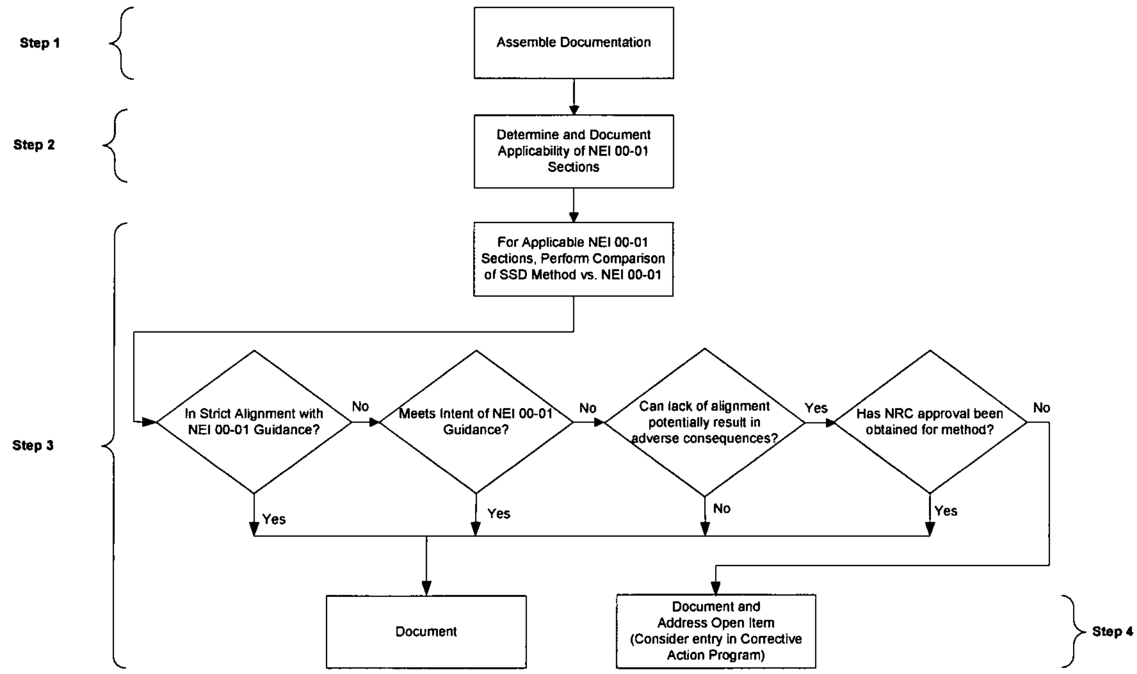

Figure 4-2 – Summary of Nuclear Safety Methodology Review Process (FAQ 07-0039)

4.2.1.2 Safe and Stable Conditions for the Plant

Overview of Process

The nuclear safety goals, objectives and performance criteria of NFPA 805 allow more flexibility than the previous deterministic programs based on 10 CFR 50 Appendix R and NUREG 0800, Section 9.5-1 (and NEI 00-01, Chapter 3) since NFPA 805 only requires the licensee to maintain the fuel in a safe and stable condition rather than achieve and maintain cold shutdown.

NFPA 805, Section 1.6.56, defines Safe and Stable Conditions as follows

> *"For fuel in the reactor vessel, head on and tensioned, safe and stable conditions are defined as the ability to maintain Keff <0.99, with a reactor coolant temperature at or below the requirements for hot shutdown for a boiling water reactor and hot standby for a pressurized water reactor. For all other configurations, safe and stable conditions are defined as maintaining Keff <0.99 and fuel coolant temperature below boiling."*

The nuclear safety goal of NFPA 805 requires "...reasonable assurance that a fire during any operational mode and plant configuration will not prevent the plant from achieving and maintaining the fuel in a safe and stable condition" without a specific reference to a mission time or event coping duration.

For CNP to be in a safe and stable condition, it will not be necessary to perform a transition to cold shutdown as currently required under 10 CFR 50, Appendix R. Therefore, the unit will remain at or below the temperature defined by a hot standby plant operating state for the event.

Results

Demonstration of the Nuclear Safety Performance Criteria for safe and stable conditions at CNP was performed in two analyses.

- At-Power analysis, Modes 1-3. This analysis is discussed in Section 4.2.4.
- Non-Power analysis, which includes Mode 4 and below. This analysis is discussed in Section 4.3.

Based on the CNP NSCA Report, the proposed NFPA 805 licensing basis for CNP has been developed to ensure that the plant can achieve and maintain the fuel in a "safe and stable" condition assuming that a fire event occurs during CNP Mode 1 (Power Operation), Mode 2 (Startup) or Mode 3 (Hot Standby).

The NSCA demonstrates that CNP can achieve and maintain Mode 3, using post-fire response procedures with the minimum plant operating shift staff, for an initial coping time of 24 hours. This initial coping time is based on the design capacity for selected systems (e.g., AFW and CVCS Charging), and the ability of the CNP ERO to respond to the event, with adequate time allowed for the ERO personnel to muster, assess the extent of fire damage, and assist the plant operating staff with implementation of the required actions to sustain Mode 3 (Hot Standby) beyond 24 hours using EOPs, or to assess the extent of fire damage, and assist the plant operating staff with an option to proceed and implement actions and/or repairs for the plant to transition to, and enter, Mode 4 (Hot Shutdown) and proceed to Mode 5 (Cold Shutdown), if necessary. In addition, modeling and analysis of a Reactor Trip with LOOP transient in Calculation AEP-CP-001 confirms that the post-trip reactor coolant system (RCS) conditions (at the post-trip no load Tavg without cooldown) can be sustained in a safe and stable condition for at least 24 hour.

Beyond the initial coping period, restoration procedures (1/2-OHP-4025-R-INDEX) are available for use and adequate supporting staff personnel are available to accomplish the restoration activities and perform additional local control and monitoring functions. These procedures may be used until repairs are made to fire-damaged systems and components. The plant evaluation team assists in prioritizing and tracking the status of restoration activities. Personnel assigned to restoration procedures are instructed to follow normal safety practices and applicable portions of applicable conduct of operations guidelines.

It should also be noted that some manual operator actions are directed by existing CNP plant operating procedures and may be required to extend NFPA 805 safe and stable plant operation. However, these actions have not been identified in the NFPA 805 analysis as non-compliances or as VFDRs of NFPA 805, as the actions are already part of the existing CNP plant licensing basis, are part of the existing CNP plant design, and are included in the Internal Events PRA and the FPRA (e.g., actions to provide a backup source of inventory to the AFW System via a manual valve alignment, etc).

The following provides additional detail regarding the "safe and stable" plant operation objective for the CNP NFPA 805 analysis:

- The analysis includes assessment of the fire impact upon the CNP plant systems and features that are required to achieve and maintain Mode 3, from Mode 1.
- The analysis adequately bounds the objective of "safe and stable" plant operation for a fire event occurring in Mode 3.
- The Mode 3 applicability for the analysis is defined as being up to the point at which the MCC breakers for the shutdown cooling suction valves are un-locked and closed, at

which point spurious operation of these high/low pressure interface valves can occur due to fire damage to the valve control circuitry.

- CNP has TS requirements that delineate time limits for placing the unit in a safe mode or other specified condition when operation cannot be maintained within the limits for safe operation. The time limits specified to reach a lower mode of operation permit the shutdown to proceed in a controlled and orderly manner that is well within the specified maximum cooldown rate and within the capabilities of the unit, assuming that only the minimum required equipment is operable.
- CNP design features provide sufficient diesel fuel oil on-site for an emergency diesel generator (as necessary, for those fire areas where offsite power is not free of fire damage) to operate for 7 days.
- CNP has design features and procedures to ensure that an adequate source of inventory is provided for decay heat removal in sustained Mode 3 conditions (i.e., CST re-fill capability from essential service water for the AFW pumps).
- Core decay heat in the Mode 3 will be rejected to the secondary plant through the steam generators, and then to atmosphere through the main steam safety relief valves operating as spring relief valves. For sustained Mode 3 conditions, actions can be taken to operate the SG PORVs from the control room or locally at their nitrogen control station.
- Gravity insertion of the control rods into the reactor core will ensure initial reactivity control is achieved and maintained for Mode 3. However, the CNP reactor core design does not ensure that there will not be a return to criticality with the plant in sustained Mode 3. Consequently, maintaining the "safe and stable" plant condition for NFPA 805 will require boration of the RCS. CNP has design features and procedures to ensure that an adequate source of borated inventory is provided to prevent a return to criticality in sustained Mode 3 (i.e., from the RWST or BAT) utilizing the CVCS system.
- Inventory makeup to the RCS may be required to account for expected RCS leakage and minimal RCS shrinkage. CNP has design features and procedures to ensure that an adequate source of borated inventory is provided for RCS inventory control in sustained Mode 3 (i.e., RCS inventory makeup from the RWST to maintain the RCS sub-cooled) utilizing the CVCS system.
- CNP has design features and repair procedures to ensure that an adequate source of heat input is maintained for RCS pressure control in sustained Mode 3 beyond 24 hours (i.e., pressurizer heater input to maintain the RCS sub-cooled) utilizing available combinations of the backup pressurizer heaters. The backup pressurizer heaters are capable of being energized from emergency diesel generator power.
- CNP has design features and repair procedures to ensure the ability to depressurize the RCS utilizing the pressurizer PORVs from the control room for sustained Mode 3 operations.

4.2.1.3 Establishing Recovery Actions

Overview of Process

NEI 04-02 and RG 1.205 suggest that a licensee submit a summary of its approach for addressing the transition of OMAs as recovery actions in the LAR (RG 1.205, Regulatory Position 2.2.1 and NEI-04-02, 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.

The discussion below provides the methodology used to transition pre-transition OMAs and to determine the population of post-transition recovery actions. This process is based on FAQ 07-0030 (ML103090602) and consists of the following steps:

Step 1: Clearly define the PCS(s) and determine which pre-transition OMAs are taken at the PCS(s). (Activities that occur in the Main Control Room are not considered pre-transition OMAs). Activities that take place at PCS(s) or in the Main Control Room are not recovery actions, by definition.

Step 2: Determine the population of recovery actions that are required to resolve VFDRs (to meet the risk acceptance criteria or maintain a sufficient level of defense-in-depth).

Step 3: Evaluate the additional risk presented by the use of recovery actions required to demonstrate the availability of a success path.

Step 4: Evaluate the feasibility of the recovery actions.

Step 5: Evaluate the reliability of the recovery actions.

Results

The review results are documented in CNP Technical Evaluation R1900-0026-001 "Recovery Action Transition for NFPA 805". Refer to Attachment G for the detailed evaluation process and summary of the results from the process.

4.2.1.4 Evaluation of Multiple Spurious Operations

Overview of Process

NEI 04-02 suggests that a licensee submit a summary of its approach for addressing potential fire-induced MSOs for NRC review and approval. As a minimum, NEI 04-02 suggests that the summary contain sufficient information relevant to methods, tools, and acceptance criteria used to enable the NRC to determine the acceptability of the licensee's methodology. The methodology utilized to address MSOs for CNP is summarized below.

As part of the NFPA 805 transition project, a review and evaluation of CNP susceptibility to fire-induced MSOs was performed. The process was conducted in accordance with NEI 04-02 and RG 1.205, as supplemented by FAQ 07-0038 Revision 3 (ML110140242). The PWR Generic MSO list in WCAP-16933-NP (Rev. 1 dated June 2010) was utilized. A final review against the latest available information was performed in January 2011.

The approach outlined in Figure 4-3 (based on Figure 4-8 from FAQ 07-0038) was used to address fire-induced MSOs at CNP. This method used insights from the Fire PRA developed in support of transition to NFPA 805 and consists of the following:

- Identifying potential MSOs of concern.
- Conducting an expert panel to assess plant specific vulnerabilities (e.g., per NEI 00-01, Rev. 1 Section F.4.2).
- Updating the FPRA model and the NSCA to include the MSOs of concern, as applicable.
- Evaluating for NFPA 805 Compliance.
- Documenting Results.

This process supports the transition to the new licensing basis. Post-transition changes will use the RI-PB change process. The post-transition change process for the assessment of a specific MSO will be a simplified version of this process, and may not need the level of detail shown in the following section (e.g., an expert panel may not be necessary to identify and assess a new potential MSO. Identification of new potential MSOs may be part of the plant change review process or inspection process).

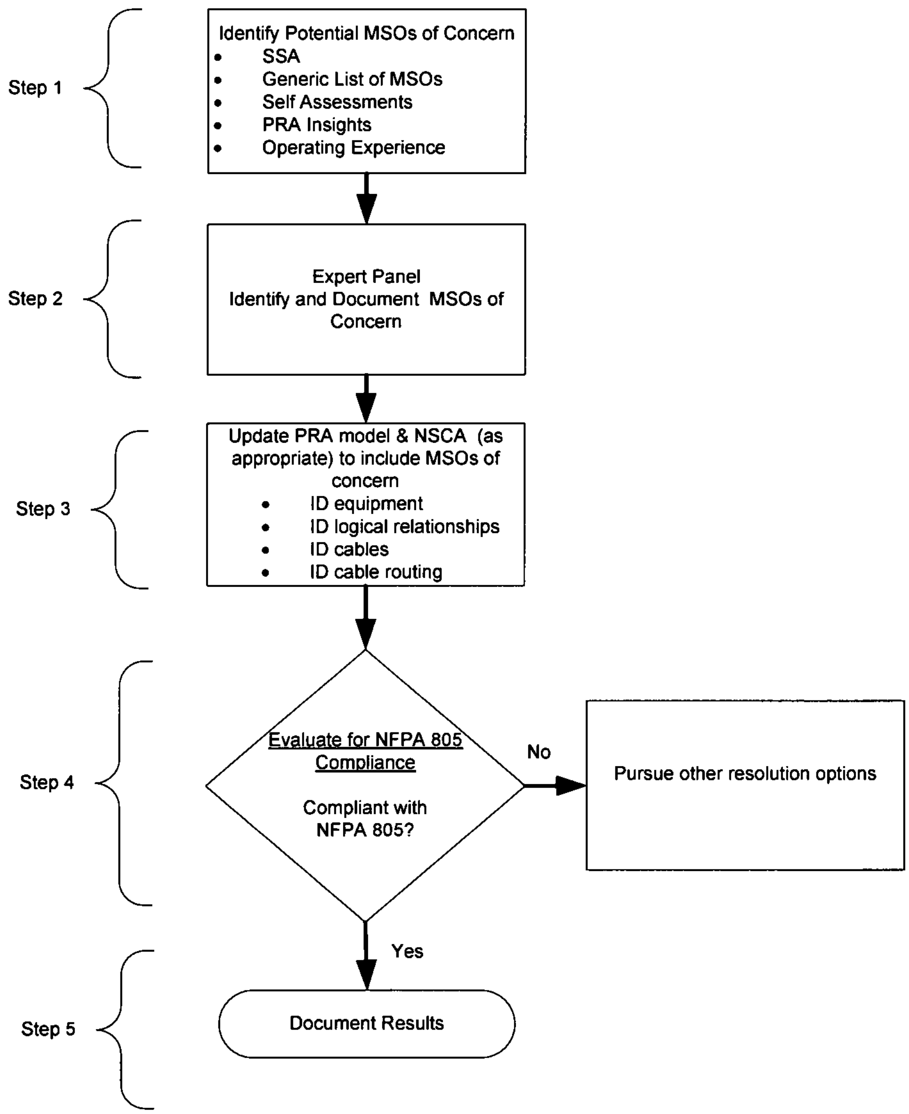

Figure 4-3 – Multiple Spurious Operations – Transition Resolution Process (Based on FAQ 07-0038)

Results

Refer to Attachment F for the process used by I&M and the results from implementing the process.

4.2.2 Existing Engineering Equivalency Evaluation Transition

Overview of Evaluation Process

The EEEEs that support compliance with NFPA 805 Chapter 3 or Chapter 4 (both those that existed prior to the transition and those that were created during the transition) were reviewed using the methodology contained in NEI 04-02. The methodology for performing the EEEE review includes the following determinations:

The EEEE is not based solely on quantitative risk evaluations,

The EEEE is an appropriate use of an engineering equivalency evaluation,

The EEEE is of appropriate quality,

The standard license condition is met,

The EEEE is technically adequate,

The EEEE reflects the plant as-built condition, and

The basis for acceptability of the previous EEEEs remain valid

In accordance with the guidance in RG 1.205, Regulatory Position 2.3.2 and NEI 04-02, as clarified by FAQ 07-0054, "Demonstrating Compliance with Chapter 4 of NFPA 805," EEEEs that demonstrate that a fire protection system or feature is "adequate for the hazard" are summarized in this LAR as follows:

- If not requesting specific approval for "adequate for the hazard" EEEEs, then the EEEE was referenced where required and a brief description of the evaluated condition was provided.
- If requesting specific NRC approval for "adequate for the hazard" EEEEs, then the EEEE was referenced where required to demonstrate compliance and was included in Attachment L for NRC review and approval.

In all cases, the reliance on EEEEs to demonstrate compliance with NFPA 805 requirements was documented in this LAR.

Results

The review results for EEEEs are documented in Report R1900-001-003 *"Engineering Evaluation Review".*

In accordance with the guidance in RG 1.205, Regulatory Position 2.3.2 and NEI 04-02, as clarified by FAQ 07-0054, "Demonstrating Compliance with Chapter 4 of NFPA 805," EEEEs used to demonstrate compliance with Chapters 3 and 4 of NFPA 805 are referenced in Attachments A and C as appropriate. In addition, none of the transitioning EEEEs require NRC approval.

4.2.3 Licensing Action Transition

Overview of Evaluation Process

The existing licensing actions (exemption requests and SEs) review was performed in accordance with NEI 04-02. The methodology for the licensing action review included the following:

- Determination of the bases for acceptability of the licensing action.
- Determination that these bases for acceptability are still valid and required for NFPA 805.

Results

Attachment K contains the detailed results of the Licensing Action Review.

The following licensing actions will be transitioned into the NFPA 805 fire protection program as previously approved (NFPA 805 Section 2.2.7). The bases for previous acceptance of these

licensing actions have been verified and determined to be still valid. These licensing actions are considered compliant under 10 CFR 50.48(c).

- Exemption Request for the lack of automatic suppression for Fire Zone 29G, Circulating Water Pump MCC Room, Elevation 575 feet, both units (NRC SER Dated December 23, 1983)
- Exemption Request from the requirements of Section III.O, Reactor Coolant Pump Oil Collection System (NRC SERs Dated December 23, 1983 and January 19, 2001)

The following licensing actions are no longer necessary and will not be transitioned into the NFPA 805 fire protection program.

- Exemption Request for the lack of automatic suppression for Fire Zone 1, RHR/CTS Pump Area, Auxiliary Building, Elevation 573 feet. (NRC SER Dated December 23, 1983)

  This exemption is no longer required for transition because the credited NFPA 805 compliance strategy 4.2.3.2 going forward does not require an automatic suppression system for the area under review.

- Exemption Request for the lack of fixed suppression for Fire Zone 14, Transformer Room, Elevation 591 feet, Unit 1 (NRC SER Dated December 23, 1983)

  This exemption is no longer required for transition because the credited NFPA 805 compliance strategy 4.2.3.2 going forward does not require a fixed suppression system for the area under review.

- Exemption Request for the lack of fixed suppression for Fire Zone 20, Transformer Room, Elevation 591 feet, Unit 2 (NRC SER Dated December 23, 1983)

  This exemption is no longer required for transition because the credited NFPA 805 compliance strategy 4.2.3.2 going forward does not require a fixed suppression system for the area under review.

- Exemption Request for the lack of fixed suppression for Fire Zones 29A,B,E, Unit 1 ESW pumps and MCCs (NRC SER Dated December 23, 1983)

  This exemption is no longer required for transition because the boundary definitions and compliance strategy have changed (NFPA 805 Section 4.2.3.3.c) See exemption for the lack of automatic suppression for Fire Zone 29G, Circulating Water Pump MCC Room.

- Exemption Request for the lack of fixed suppression for Fire Zones 29C,D,F, Unit 2 ESW pumps and MCCs (NRC SER Dated December 23, 1983)

  This exemption is no longer required for transition because a performance-based approach (i.e., NFPA 805, 4.2.4.2 "Use of Fire Risk Evaluation") was used and evaluated the condition as acceptable.

- Exemption Request for the lack of fixed suppression for Fire Zones 33, 33A, and 33B, Unit 1 East Main Steam Valve Enclosure (NRC SER Dated December 23, 1983)

  This exemption is no longer required for transition because a performance-based approach (i.e., NFPA 805, 4.2.4.2 "Use of Fire Risk Evaluation") was used and evaluated the condition as acceptable.

- Exemption Request for the lack of fixed suppression for Fire Zones 34, 34A and 34B, Unit 2 East Main Steam Valve Enclosure (NRC SER Dated December 23, 1983)

This exemption is no longer required for transition because the credited NFPA 805 compliance strategy 4.2.3.2 going forward does not require a fixed suppression system for the area under review.

- Exemption Request for the lack of 3-Hour Rated Barrier between redundant CCW Systems in Fire Zone 44S, Auxiliary Building South, elevation 609 feet, both units (NRC SER Dated December 23, 1983)

  This exemption is no longer required for transition because a performance-based approach (i.e., NFPA 805, 4.2.4.2 "Use of Fire Risk Evaluation") was used and evaluated the condition as acceptable.

- Exemption Request for the lack of fixed suppression for Fire Zone 53, Unit 1 Control Room (NRC SER Dated December 23, 1983)

  This exemption is no longer required for transition because a performance-based approach (i.e., NFPA 805, 4.2.4.2 "Use of Fire Risk Evaluation") was used and evaluated the condition as acceptable.

- Exemption Request for the lack of fixed suppression for Fire Zone 54, Unit 2 Control Room (NRC SER Dated December 23, 1983)

  This exemption is no longer required for transition because a RI-PB analysis (NFPA 805, 4.2.4 "Fire Risk Evaluation") was performed and evaluated the condition as acceptable.

- Exemption Request for the requirements of Section III.J, Emergency Lighting (NRC SER Dated May 26, 1987)

  This exemption is no longer required since there is no 8-hour emergency lighting requirement per NFPA 805.

Since the exemptions are either compliant with 10 CFR 50.48(c) or no longer necessary, in accordance with the requirements of 10 CFR 50.48(c)(3)(i), I&M requests that the exemptions listed in Attachment K be rescinded as part of the LAR approval process. See Attachment O, "Orders and Exemptions."

4.2.4 Fire Area Transition

Overview of Evaluation Process

The Fire Area Transition (NEI 04-02 Table B-3) was performed using the methodology contained NEI 04-02 and FAQ 07-0054. The methodology for performing the Fire Area Transition, depicted in Figure 4-4, was as follows:

Step 1 - Assemble documentation. Industry and plant-specific fire area analyses and licensing basis documents were gathered.

Step 2 – Document fulfillment of nuclear safety performance criteria.

- The method of accomplishment of nuclear safety performance goals, was assessed and documented in summary level form, for each fire area.
- The evaluation of the effects of fire suppression activities on the ability to achieve the nuclear safety performance criteria was documented.
- A review of the licensing actions of the selected fire area was performed and the results were and documented. See Section 4.2.3.

- A review of EEEEs was performed (or new evaluations created) documenting the basis for acceptability. See Section 4.2.2.
- A review of pre-transition OMAs was performed to determine those actions taking place outside of the main control room or outside of the PCS(s). See Section 4.2.1.3.

Step 3 – VFDR identification and characterization and resolution considerations. variances from the deterministic requirements of NFPA 805, Section 4.2.3 were identified and documented as a separation issue. VFDR problem statements were developed to support resolution.

Step 4 – Performance-Based evaluations (Fire Modeling or Fire Risk Evaluations). See Section 4.5.3 for additional information.

Step 5 – Final Disposition.

- Final disposition of the VFDRs was documented in Attachment C (NEI 04-02 Table B-3).
- For recovery action compliance strategies, the manual action feasibility analysis of the required recovery actions was completed. Note: if a recovery action could meet the feasibility requirements established per NEI 04-02, then alternate means of compliance was considered.
- The post transition NFPA 805 Chapter 4 compliance basis was documented.

Step 6 – Document required fire protection systems and features. The NFPA 805 Section 4.2.3 compliance strategies (including fire area licensing actions and engineering evaluations) and the NFPA 805 Section 4.2.4 compliance strategies (including simplifying deterministic assumptions) were reviewed to determine the scope of fire protection systems and features "required" by NFPA 805 Chapter 4. The required fire protection systems and features are subject to the applicable requirements of NFPA 805 Chapter 3.

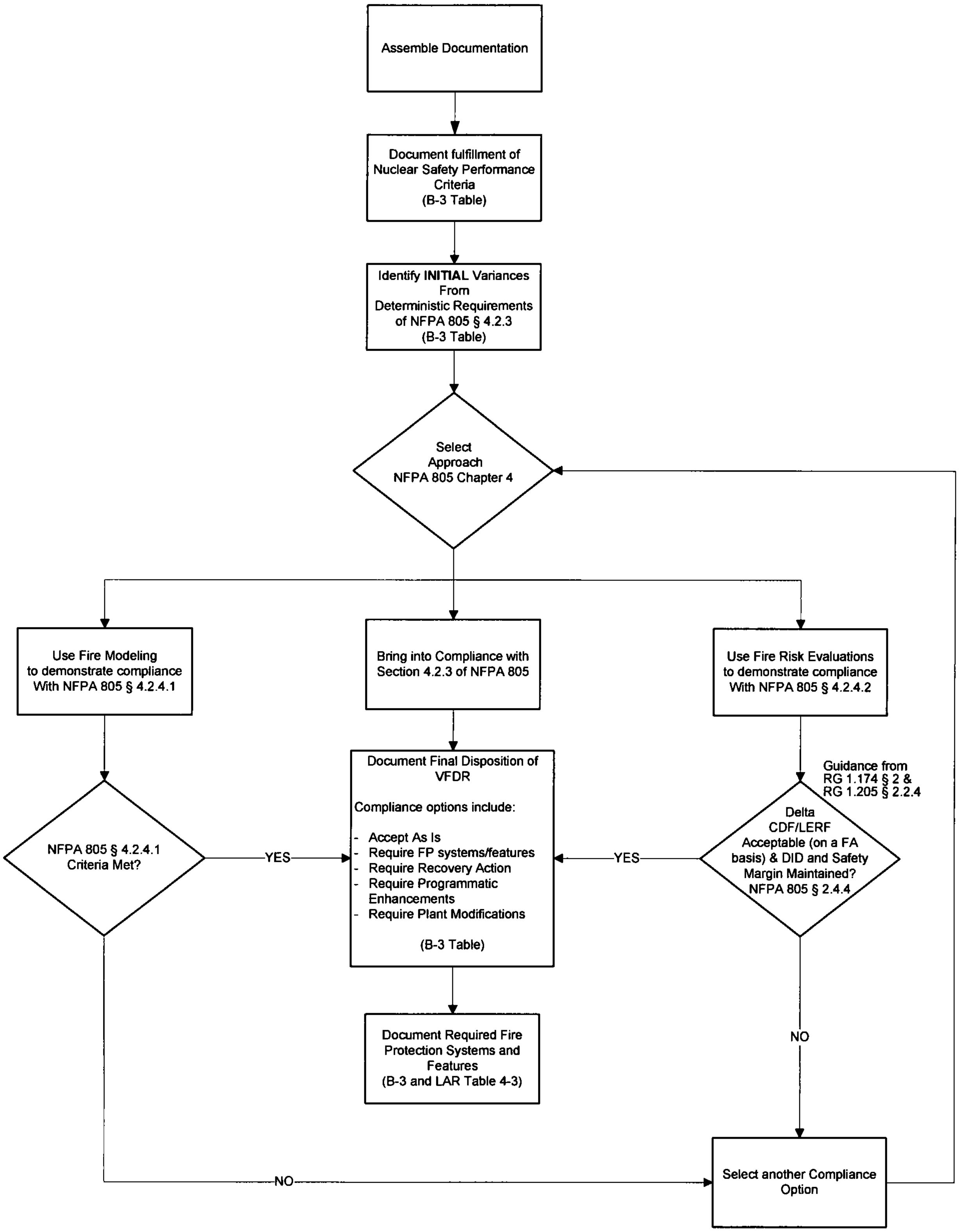

Figure 4-4 – Summary of Fire Area Review [Based on FAQ 07-0054 Revision 1]

Results of the Evaluation Process

Attachment C contains the results of the Fire Area Transition review (NEI 04-02 Table B-3). Attachment C summarizes compliance with Chapter 4 of NFPA 805 on a fire area basis.

NEI 04-02 Table B-3 (Attachment C) includes the following summary level information for each fire area:

- Regulatory Basis – NFPA 805 post-transition regulatory bases are included.
- Performance Goal Summary – An overview of the method of accomplishment of each of the performance criteria in NFPA 805 Section 1.5 is provided.
- Reference Documents – Specific references to NSCA documents are provided.
- Licensing Actions – Specific references to exemption requests that will remain part of the post-transition licensing basis are provided, when applicable. A brief description of the condition and the basis for acceptability of the licensing action is provided.
- EEEE – Specific references to EEEEs that rely on determinations of "adequate for the hazard" that will remain part of the post-transition licensing basis are provided, when applicable. A brief description of the condition and the basis for acceptability is provided.
- VFDRs – Specific variances from the deterministic requirements of NFPA 805 Section 4.2.3 are provided, when applicable. Refer to Section 4.5.2 for a discussion of the performance-based approach.
- Required Fire Protection Systems and Features - Detection/suppression/feature required in the fire area based on NFPA 805 Chapter 4 compliance. The information is provided on a zone basis.
- Fire Suppression Effects on Nuclear Safety Performance Criteria – An overview of the effects of fire suppression activities on the ability to achieve the nuclear safety performance criteria for each fire area.
- Fire Area Comments - Additional information concerning compliance for the fire area that is not captured elsewhere in the table.

4.3 Non-Power Operational Modes

4.3.1 Overview of Evaluation Process

I&M has implemented the process outlined in NEI 04-02 and FAQ 07-0040, "Clarification on Non-Power Operations." The goal (as depicted in Figure 4-6) is to ensure that contingency plans are established when the plant is in an NPO condition where the risk is high. During low risk periods, normal risk management controls and fire prevention/protection processes and procedures will be utilized.

The process to demonstrate that the nuclear safety performance criteria are met during NPO modes involved the following steps:

- Reviewed the existing Outage Management Processes
- Identified Equipment/Cables:
    - Reviewed plant systems to determine success paths that support each of the defense-in-depth Key Safety Functions (KSFs), and

- Identified cables required for the selected components and determined their routing.

- Performed Fire Area Assessments (identify "pinch points," i.e., plant locations where a single fire may damage all success paths of a KSF).

Managed pinch-points associated with fire-induced vulnerabilities during the outage.

The process is depicted in Figures 4-5 and 4-6. The results are presented in Section 4.3.2.

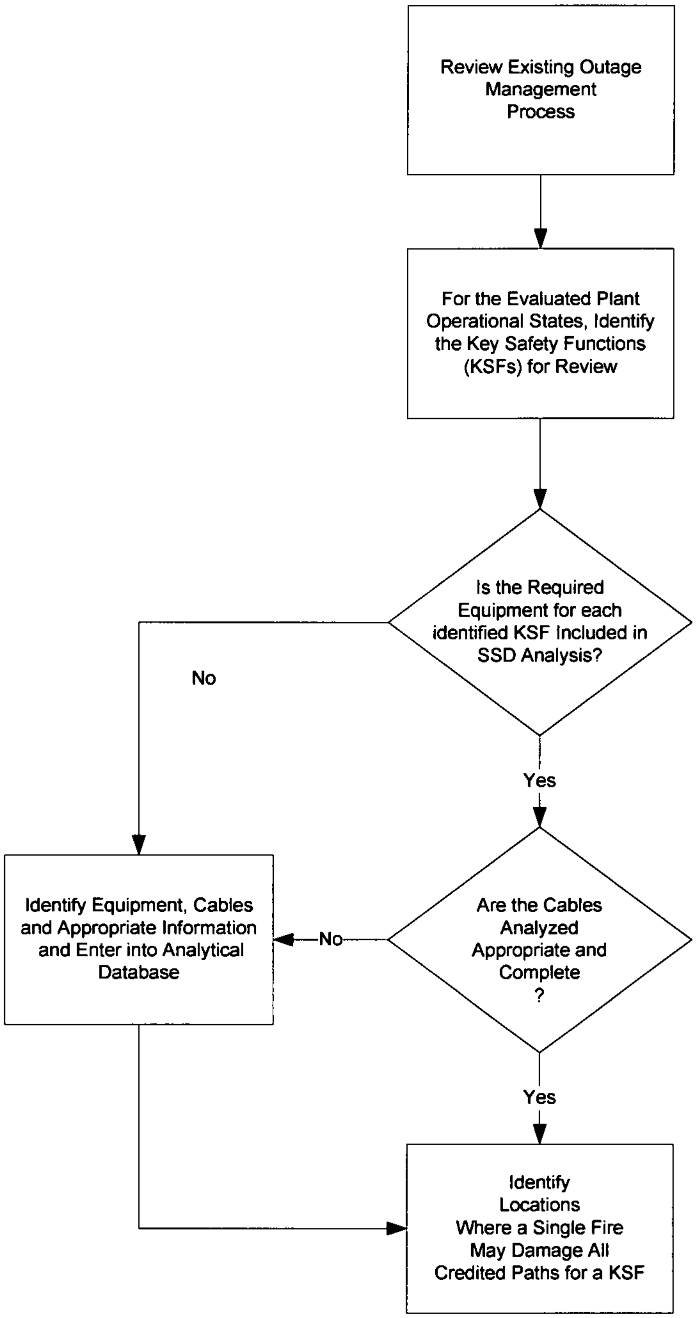

Figure 4-5 Review POSs, KSFs, Equipment, and Cables, and Identify Pinch Points

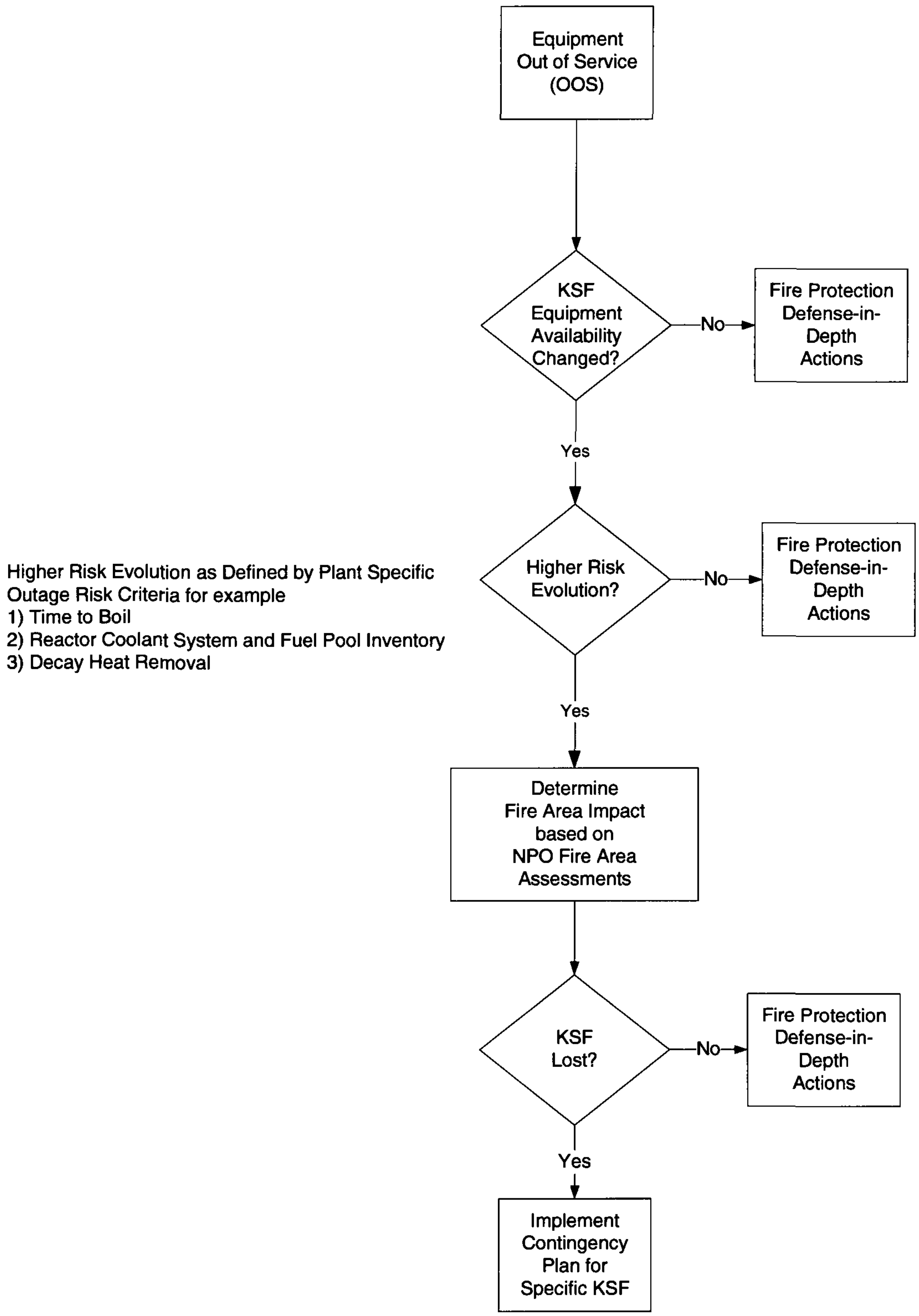

Figure 4-6 Manage Pinch Points

4.3.2 Results of the Evaluation Process

Based on FAQ 07-0040 (Revision 4), the Plant Operating States (POS) considered for equipment and cable selection are defined in Technical Evaluation R1900-005-001 "Non-Power Operation Modes Transition Review". Components were identified to support the KSFs of Inventory Control, Decay Heat Removal Capability, Reactivity Control, Containment Closure, and associated support functions (process cooling and electrical power). A model was developed in the NFPA 805 Analysis Database (Genesis Solution Suite, SAFE Module). Equipment was logically tied to the supported KSF. Power supplies, interlocks, and supporting equipment were logically tied to their parent component.

For those components which had not been previously analyzed in support of the at-power analysis or whose functional requirements may have been different for the non-power analysis, cable selection was performed in accordance with approved project procedures. Cables necessary to support the selected function of a component were selected and analyzed for fire impact.

Technical Evaluation R1900-005-001 contains the fire area assessment, the identified pinch points, and general recommendations for administrative controls to reduce that fire risk as well as a proposed strategy for recovering the KSF should a fire occur. In accordance with FAQ 07-0040, any area experiencing fire damage which eliminates all success paths for a KSF (without recovery actions outside the main control room) is considered a pinch point. Fire modeling was not used to eliminate any fire area from being a pinch point.

The list of generic recommendations specified in Technical Evaluation R1900-005-001 considers the following actions from FAQ 07-0040:

- Prohibition or limitation of hot work in fire areas during periods of increased vulnerability
- Verification of operable detection and/or suppression in the vulnerable areas.
- Prohibition or limitation of combustible materials in fire areas during periods of increased vulnerability
- Use of plant configuration changes (e.g., removing power from equipment once it is placed in its desired position)
- Provision of additional fire patrols at periodic intervals or other appropriate compensatory measures (such as surveillance cameras) during increased vulnerability
- Use of recovery actions to mitigate potential losses of key safety functions.
- Identification and monitoring in - situ ignition sources for "fire precursors" (e.g., equipment temperatures)
- Rescheduling of work to a period with lower risk or higher DID

Refer to Attachment D for additional details. Based on consideration of the vulnerable areas and incorporation of generic recommendations from FAQ 07-0040 into appropriate plant procedures and practices, prior to implementation of NFPA 805 (See Attachment S), the performance goals (KSFs) for Non-Power Operations will be fulfilled and the requirements of NFPA 805 will be met.

4.4 Radioactive Release Performance Criteria

4.4.1 Overview of Evaluation Process

The review of the FPP against NFPA 805 requirements for fire suppression related radioactive release was performed using the methodology contained in NEI 04-02 and subsequent guidance provided in NFPA 805 Task Force FAQ 09-0056. The methodology consisted of the following:

- "Screen-out" fire zones based on the lack of potential for contaminated materials during all plant operating modes, including full power and non-power conditions. The screening process considered input from RP personnel and review of CNP fire pre-plans. The evaluation focused on radioactive release to any unrestricted area due to fire fighting activities only; radioactive release due to potential fuel cladding damage was not evaluated. The nuclear safety goal, nuclear safety objectives, and nuclear safety performance criteria specified in NFPA 805 require the prevention of fuel cladding damage. As such, radiological release due to fuel damage does not require a separate examination since no such damage is assumed to occur without violating the basic requirements of NFPA 805.
- Review of fire pre-plans and fire brigade training materials to identify FPP elements (e.g., systems / components / procedural control actions / flow paths, etc.) that are being credited to meet the radioactive release goals, objectives, and performance criteria during all plant operating modes, including full power and non-power conditions.
- Review of engineering controls to ensure containment of gaseous and liquid effluents (e.g., smoke and fire fighting agents). This review included all plant operating modes (including full power and non-power conditions). Otherwise, a bounding analysis, quantitative analysis, or other analysis that demonstrated that the limitations for instantaneous release of radioactive effluents specified in the unit's TS are met was provided.

4.4.2 Results of the Evaluation Process

CNP Technical Evaluation 12.31, Radioactive Release Review, details the results of the screening process and review of pre-fire plans, fire brigade training materials, and engineering controls.

The radioactive release review determined the FPP will be compliant with the requirements of NFPA 805 and the guidance in NEI 04-02 and RG 1.205 upon completion of the implementation items identified in Attachment S.

The site specific review of the direct effects of fire suppression activities on radioactive release is summarized in Attachment E.

4.5 Fire PRA and Performance-Based Approaches

RI-PB evaluations are an integral element of an NFPA 805 fire protection program. Key parts of RI-PB evaluations include:

- A Fire PRA (discussed in Section 4.5.1 and Attachments U, V, and W).
- NFPA 805 Performance-Based Approaches (discussed in Section 4.5.2).

4.5.1 Fire PRA Development and Assessment

In accordance with the guidance in RG 1.205, an Fire PRA model was developed for CNP in compliance with the requirements of Part 4 "Internal Fires at Power Probabilistic Risk Assessment Requirements," of the ASME and ANS combined PRA Standard, ASME/ANS RA-Sa-2009, "Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Application," (hereafter referred to as the Fire PRA Standard). I&M had a peer review of the Fire PRA performed by independent industry analysts in accordance with RG 1.200. The resulting fire risk assessment model is used as the analytical tool to perform Fire Risk Evaluations during the transition process.

A systematic review was conducted of alternative methods that are under EPRI/NRC review, and concluded that none of the proposed methods was used in the DC Cook Fire PRA. Additionally, the DC Cook Fire PRA has not used any methods that are under development (Table 4-2 of NEI document "Roadmap for Attaining Realism in Fire PRAs", December 2010, presented to the ACRS).

Section 4.5.1.1 describes the Internal Events PRA model. Section 4.5.1.2 describes the Fire PRA model. Section 4.5.1.3 describes the results and resolution of the peer review of the Fire PRA, and Section 4.5.1.4 describes insights gained from the Fire PRA.

4.5.1.1 Internal Events PRA

The CNP base internal events PRA (CNP PRA Model 08MORW) was the starting point for the Fire PRA.

Since the CNP internal events PRA model's conversion to WinNUPRA in 2001, the CNP PRA has undergone a self-assessment by a team of knowledgeable AEP/Contractor PRA personnel, an independent, complete-scope WOG peer review, a gap assessment by an independent contractor PRA organization, and a focused-scope WOG Peer Review. An assessment of possible impacts of open findings and observations related to the CNP internal events PRA model on the NFPA 805 program is summarized below.

Of the 55 open SRs, 22 are of a technical nature that have small numerical implications for the internal events PRA model. The remaining open SRs require enhanced documentation. Attachment U discusses the open items to illustrate the technical adequacy of the Internal Events PRA supporting the Fire PRA. To address QU-6 and DA-E3-01, the fire analysis includes sensitivity analyses to determine the impact of the assumptions and sources of model and data uncertainty on the fire PRA results.

4.5.1.2 Fire PRA

A Fire PRA model was developed for CNP using the guidance provided in NUREG/CR-6850/EPRI TR-1011989 (including supplement 1), EPRI TR-1016735, and draft NUREG-1921. Attachment H provides a listing of the approved FAQs that affect the overall license transition process for CNP. The resulting fire risk assessment model is used as the analytical tool to perform Fire Risk Evaluations during the transition process and to develop estimates of the

potential change in fire related risk associated with those changes. The supporting calculations for the CNP Fire PRA have been prepared and reviewed internally, peer reviewed, and peer review comments addressed along with the Fire PRA documentation developed for Units 1 & 2.

The fire PRA was developed using the internal events PRA as a starting point. The internal events PRA was modified to capture the effects of fire, both as an initiator of an event and the subsequent potential failure modes for affected circuits or individual targets. The fire PRA has been quantified using the WinNUPRA PRA software. The Fire PRA is a unit-specific analysis. Additionally, as a spatial analysis, the Fire PRA has been developed to explicitly model the differences in equipment locations and cable routing. For example, a Unit 2 fire compartment or zone may be risk significant in the Unit 2 Fire PRA, but the same compartment may have quite different impact on the fire risk for Unit 1. The CNP fire PRA models each unit with a separate set of event trees, fault trees and basic event database associated. The CNP fire PRA is documented in a series of reports and calculations associated with each NUREG/CR-6850 fire PRA task.

Fire Model Utilization in the Application

Fire modeling was performed as part of the Fire PRA development (NFPA 805 Section 4.2.4.2). RG 1.205, Regulatory Position 4.2 and Section 5.1.2 of NEI 04-02, provide guidance to identify fire models that are acceptable to the NRC for plants implementing a risk-informed, performance-based licensing basis.

The following fire models were used:

- Flame Height (Method of Heskestad)
- Plume Centerline Temperature (Method of Heskestad)
- Radiant Heat Flux (Point Source Method)
- Plume Radius (Method of Heskestad)
- Hot Gas Layer (Method of MQH)
- Hot Gas Layer (Method of Beyler)
- Hot Gas Layer (Method of Foote, Pagni, and Alvares [FPA])
- Hot Gas Layer (Method of Deal and Beyler)
- Ceiling Jet Temperature (Method of Alpert)
- Hot Gas Layer Calculations using Fire Dynamics Simulator (FDS)
- Smoke Detection Actuation Correlation (Method of Heskestad and Delichatsios)
- Heat Detection Actuation Correlation
- Sprinkler Activation Correlation
- Control Room Abandonment Calculation using CFAST
- Temperature Sensitive Equipment Hot Gas Layer Study using CFAST
- Temperature Sensitive Equipment Zone of Influence Study using FDS
- Plume/Hot Gas Layer Interaction Study using FDS
- Corner and Wall Heat Release Rate
- Correlation for Heat Release Rates of Cables (Method of Lee)

- Correlation for Flame Spread over Horizontal Cable Trays (FLASH-CAT)
- Fire Door Closure Calculation using FDS

The acceptability of the use of these fire models is addressed in Attachment J.

4.5.1.3 Results of Fire PRA Peer Review

The CNP Fire PRA (CNP model of record 3Q09-FPRA) for Unit 1 and Unit 2 was peer reviewed against the requirements of ASME/ANS RA-Sa-2009, Part 4. The PWR Owner's Group (PWROG) issued a report containing the results of the CNP Fire PRA Review on July 20, 2010 (LTRRAM-II-10-041). The identification and resolution of the high level findings from the PWR OG Fire PRA Review are summarized in Attachment V.

Each of the findings from the fire PRA peer review has either been addressed with a change in the FPRA model or evaluated to have no impact on the Fire PRA. The FPRA Peer Review findings that were evaluated to have no impact either relate to documentation improvements or final resolution of technical issues that are not expected to have a significant impact on the Fire PRA risk metrics and insights.

A limited number of ASME/ANS Fire PRA Standard areas were identified by the fire PRA peer review team as meeting Category I only requirements. The capability categories are defined in the Part 4 of the combined PRA standard. Those fire PRA supporting requirements classified as Capability Category I are also summarized in Attachment V, Table V-2, with a basis/justification for acceptability for this application.

4.5.1.4 Risk Insights

Risk insights were documented as part of the development of the Fire PRA. The total plant fire CDF/LERF was derived using the NUREG/CR-6850 methodology for fire PRA development and is useful in identifying the areas of the plant where fire risk is greatest. A review of the fire initiating events that collectively represent 95% of the calculated fire risk is included as Attachment W.

4.5.2 Performance-Based Approaches

NFPA 805 outlines the approaches for performing performance-based analyses. As specified in Section 4.2.4 of this report, there are generally two types of analyses performed for the performance-based approach:

- Fire Modeling (NFPA 805 Section 4.2.4.1).
- Fire Risk Evaluation (NFPA 805 Section 4.2.4.2).

4.5.2.1 Fire Modeling Approach

In lieu of the fire modeling approach the Fire Risk Evaluation approach was utilized for the transition.

4.5.2.2 Fire Risk Approach

Overview of Evaluation Process

The Fire Risk Evaluations were completed as part of the CNP NFPA 805 transition. These Fire Risk Evaluations were developed using the Fire Risk Evaluation Task Plan (Rev. 1, April 2011). This methodology is based upon the requirements of NFPA 805, industry guidance in NEI 04-02, and RG 1.205. These requirements are summarized in Table 4-1.

Table 4-1 Fire Risk Evaluation Guidance Summary Table

Document	Section(s)	Topic
NFPA 805	2.2(h), 4.2.4, A.2.2(h), A.2.4.4, D.5	Change Evaluation (2.2(h), 2.2.9, 2.4.4 A.2.2(h), A.2.4.4, D.5) Risk of Recovery Actions (4.2.4) Use of Fire Risk Evaluation (4.2.4.2)
NEI 04-02 Revision 2	4.4, 5.3, Appendix B, Appendix I, Appendix J	Change Evaluation, Change Evaluation Forms (App. I), No specific discussion of Fire Risk Evaluation
RG 1.205 Revision 1	C.2.2.4, C.2.4, C.3.2	Risk Evaluations (C.2.2.4) Recovery Actions (C.2.4)

During the transition to NFPA 805, variances from the deterministic approach in Section 4.2.3 of NFPA 805 were evaluated using a Fire Risk Evaluation per Section 4.2.4.2 of NFPA 805. A Fire Risk Evaluation was performed for each fire area containing a VFDR of Section 4.2.3 of NFPA 805.

If the Fire Risk Evaluation meets the acceptance criteria, this is confirmation that a success path effectively remains free of fire damage and that the performance-based approach is acceptable per Section 4.2.4.2 of NFPA 805.

The Fire Risk Evaluation process consisted of the following steps (Figure 4-7 depicts the Fire Risk Evaluation process used during transition. This is generally based on FAQ 07-0054 Revision 1):

Step 1 – Prepare for the Fire Risk Evaluation.

- Definition of the VFDRs. The definition of the VFDR includes a description of problem statement and the section of NFPA 805 that is not met, type of VFDR (e.g., separation issue or degraded fire protection system), and proposed evaluation per applicable NFPA 805 section.
- Preparatory Evaluation – Fire Risk Evaluation Team Review. Using the information obtained during the development of the NEI 04-02 B-3 Table and the Fire PRA, a team review of the VFDR was performed. Depending on the scope and complexity of the VFDR, the team included the Safe Shutdown/NSCA Engineer, the Fire Protection Engineer, and the Fire PRA Engineer. The purpose and objective of this team review was to address the following;
    - Review Fire PRA modeling treatment of VFDR.
    - Ensure discrepancies are captured.

Step 2 – Perform the Fire Risk Evaluation

- The evaluator coordinated as necessary with the Safe shutdown/NSCA Engineer, Fire Protection Engineer and Fire PRA Engineer to assess the VFDR using the Fire Risk Evaluation process to perform the following:
  - Change in Risk Calculation with consideration for additional risk of recovery actions and required fire protection systems and features due to fire risk.
  - Summarize the fire area change in risk

Step 3 – Review the Acceptance Criteria

- The overall acceptance of the transition Fire Risk Evaluation will be in the form of a license amendment per 10 CFR 50.90, as required by 10 CFR 50.48(c)(3)(i). The acceptance criteria for the Fire Risk Evaluation consist of two parts. One is quantitatively based and the other is qualitatively based. The quantitative figures of merit are ΔCDF and ΔLERF. The qualitative factors are defense-in-depth and safety margin.
  - Risk Acceptance Criteria. The transition risk evaluation was measured quantitatively for acceptability using the ΔCDF and ΔLERF criteria from RG 1.174, as clarified in RG 1.205 Regulatory Position 2.2.4.
  - Defense-in-Depth. A review of the impact of the change on defense-in-depth was performed, using the guidance from NEI 04-02.
  - Safety Margin Assessment. A review of the impact of the change on safety margin was performed.

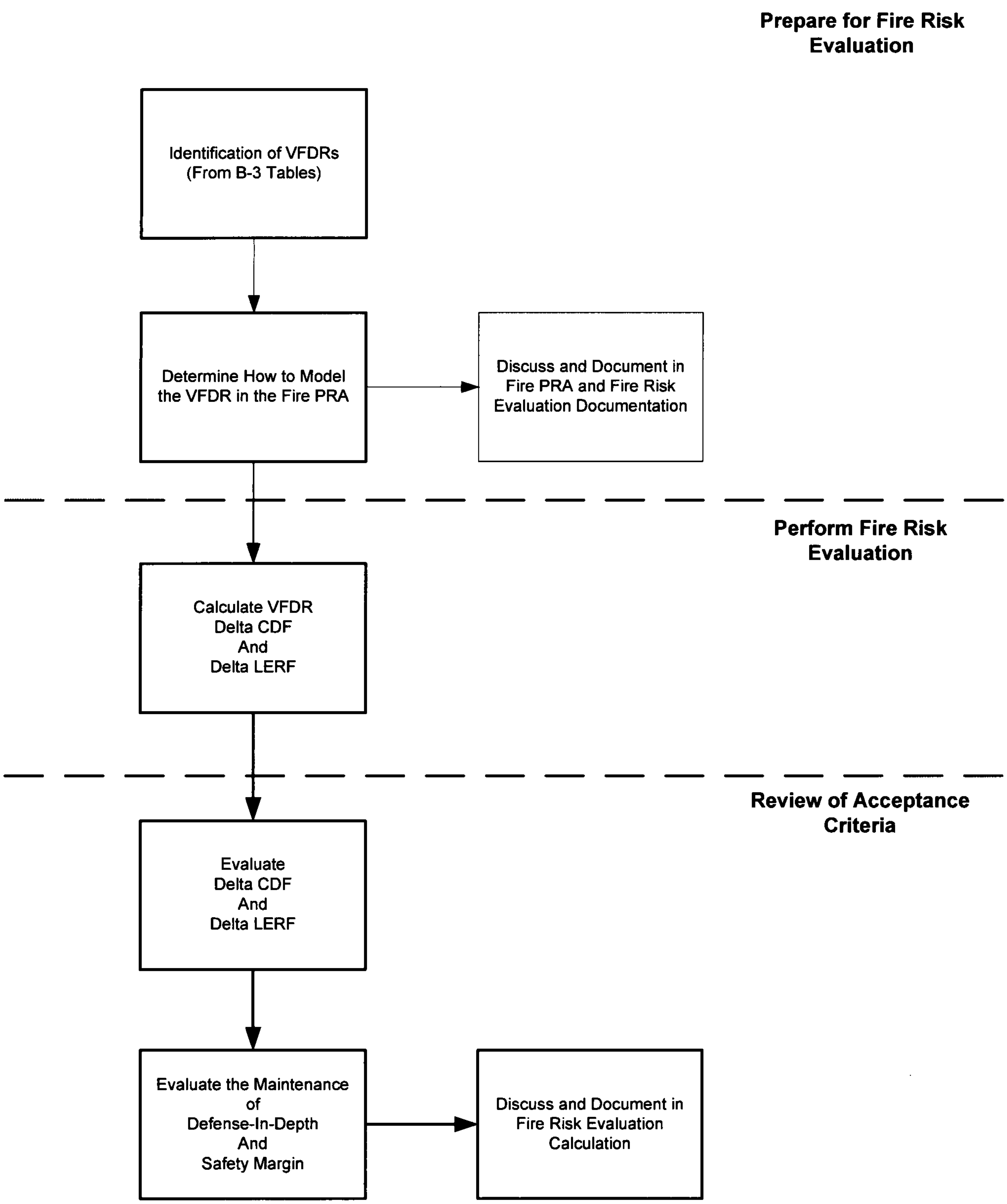

Figure 4-7 – Fire Risk Evaluation Process (NFPA 805 Transition) [Based on FAQ 07-0054 Revision 1]

Results of Evaluation Process

Disposition of VFDRs

The CNP Fire Safety Analyses document the VFDRs from NFPA 805 Section 4.2.3 identified during the fire area assessments. These variances were dispositioned using the Fire Risk Evaluation process.

Each variance dispositioned using a Fire Risk Evaluation was assessed against the Fire Risk Evaluation acceptance criteria of ΔCDF and ΔLERF, and maintenance of defense-in-depth and safety margin criteria from Section 5.3.5 of NEI 04-02 and RG 1.205. The results of these evaluations are summarized in Attachments C and W.

Following completion of transition activities, planned modifications, program changes, the plant will be compliant with 10 CFR 50.48(c).

Risk Change Due to NFPA 805 Transition

In accordance with the guidance in RG 1.205, Section C.2.2.4, "Risk Evaluations," risk increases or decreases for each fire area using Fire Risk Evaluations, and for the overall plant should be calculated. Note that the risk increase due to the use of recovery actions was included in the risk change for transition for each fire area.

RG 1.205 Section C.2.2.4.2 states in part

> *"The total increase or decrease in risk associated with the implementation of NFPA 805 for the overall plant should be calculated by summing the risk increases and decreases for each fire area (including any risk increases resulting from previously approved recovery actions). The total risk increase should be consistent with the acceptance guidelines in Regulatory Guide 1.174. Note that the acceptance guidelines of Regulatory Guide 1.174 may require the total CDF, LERF, or both, to evaluate changes where the risk impact exceeds specific guidelines. If the additional risk associated with previously approved recovery actions is greater than the acceptance guidelines in Regulatory Guide 1.174, then the net change in total plant risk incurred by any proposed alternatives to the deterministic criteria in NFPA 805, Chapter 4 (other than the previously approved recovery actions), should be risk neutral or represent a risk decrease."*

The risk increases and decreases are provided in Attachment W.

4.6 Monitoring

NFPA 805 Section 3.2.3(3) requires that procedures be established for reviews of the FPP related performance and trends. NFPA 805, Section 2.6 requires a monitoring program that, in part, establishes acceptable performance levels and a method to monitor and assess the performance of the FPP. The NFPA 805 requirements for reviews of programs related to performance and trending is provided under the CNP NFPA 805 Monitoring program.

The monitoring program will be implemented after the SE issuance, as part of the FPP transition to NFPA 805. In order to assess the impact of the transition to NFPA 805 on the current monitoring program, the CNP FPP documentation, such as the maintenance program processes, FP program implementing procedures, and plant change processes will be reviewed. Sections 4.5.3 and 5.2 of NEI 04-02, as clarified in FAQ 10-0059, will be used during the review process. The process is described in the following sections.

The following scope will be documented appropriately in the CNP NFPA 805 Monitoring Program:

- The scope of SSCs and programmatic elements to monitor.
- The levels of availability, reliability, or other criteria for those elements that require monitoring.

Development and implementation of the NFPA 805 monitoring program for CNP will be completed as part of NFPA 805 amendment implementation (See Attachment S).

4.6.1 Overview of NFPA 805 Requirements on the NFPA 805 Fire Protection System and Feature Monitoring Program

Section 2.6 of NFPA 805 states:

> *"A monitoring program shall be established to ensure that the availability and reliability of the fire protection systems and features are maintained and to assess the performance of the fire protection program in meeting the performance criteria. Monitoring shall ensure that the assumptions in the engineering analysis remain valid."*

The intent of the monitoring review is to confirm (or modify as necessary) the adequacy of the existing surveillance, testing, maintenance, compensatory measures, and oversight processes for transition to NFPA 805. This review will consider the following:

- The adequacy of the scope of systems and equipment within existing plant programs.
- The performance criteria for the availability and reliability of the required structures, systems and components.
- The adequacy of the plant corrective action program in determining causes of equipment and programmatic failures and in minimizing their recurrence.

4.6.2 Overview of Post-Transition NFPA 805 Monitoring Program

This section describes the overall Post-Transition NFPA 805 Monitoring Program process. The Monitoring program will be implemented after the SE issuance as part of the transition to NFPA 805. The monitoring process will be comprised of four phases.

- Phase 1 – Scoping
- Phase 2 – Screening using risk criteria
- Phase 3 – Risk target value determination
- Phase 4 – Monitoring implementation

The phases of the monitoring process are described as follows and depicted in Figure 4-8:

Phase 1 – Scoping

In order to meet the NFPA 805 requirements for monitoring, the following categories of SSCs and programmatic elements will be reviewed during the implementation phase for inclusion in the NFPA 805 monitoring program:

- SSCs required to comply with NFPA 805, specifically:
    - Fire protection systems and features required by the NSCA.
    - Fire protection systems and features modeled in the Fire PRA.

  - Fire protection systems and features required by Chapter 3 of NFPA 805.
  - Nuclear Safety Capability Assessment equipment.
  - Structures, systems and components relied upon to meet radioactive release criteria.
- FPP elements
- Key assumptions in engineering analyses (specifically analyses performed to demonstrate compliance with the nuclear safety and radioactive release performance criteria)

As a minimum, the fire protection systems and features (required to meet Chapter 3 of NFPA 805 and the NSCA criteria) and SSCs required to meet the radioactive release criteria will be included in the existing inspection and test program and system/program health program. In addition passive features (barriers, drains, curbs, etc.) that are relied upon to demonstrate compliance with Chapter 4 of NFPA 805 will also be included in the existing inspection and test program and system/program health program. Once applicable updates are completed, the existing programs will be adequate for routine monitoring of these SSCs.

Plant specific initiatives may be undertaken to optimize fire protection surveillance and testing practices and frequencies based upon performance in accordance with the guidance in EPRI Technical Report 1006756, "Fire Protection Surveillance Optimization and Maintenance Guide for Fire Protection Systems and Features."

Phase 2 – Screening Using Risk Criteria

Phase 2 of the process uses the risk significance criteria and screens the SSCs and programmatic elements to determine risk significant SSCs and programmatic elements. This may be accomplished at the component, programmatic element, and/or functional level. Since risk is evaluated at the analysis unit level (e.g., fire area, fire zone, ignition source, etc.), criteria must be developed to determine those analysis units for which the SSCs are considered HSS.

The Fire PRA is the primary tool used to establish the risk significance criteria and performance bounding guidelines. The screening thresholds used to determine risk significant analysis units will be those that meet the following criteria:

RAW of the monitored parameter ≥ 2.0

AND either

(CDF) x (RAW) ≥ 1.0E-7 per year

OR

(LERF) x (RAW) ≥ 1.0E-8 per year

HSS fire protection systems and features and nuclear safety capability equipment are those that meet or exceed the risk significant screening criteria. The SSCs and programmatic elements for these HSS analysis units will be included in the additional monitoring program of NFPA 805.

Low Safety Significant fire protection systems and features and nuclear safety capability equipment are those that do not meet the risk significant screening criteria and are monitored via existing programs/processes.

Additionally, the review may include other analysis units (and required FP/NSCA SSCs and programmatic elements) that are not risk significant (per the screening criteria) but are included based on plant specific history and/or operational considerations.

Phase 3 – Risk Target Value Determination

Phase 3 consists of using the Fire PRA, or other processes as appropriate, to determine target values of reliability and availability for the High Safety Significant, FP/NSCA SSCs and programmatic elements established in Phase 2.

Failure criteria will be established by an expert panel or by an evaluation based on the required fire protection and nuclear safety capability SSCs and programmatic elements assumed level of performance in the supporting analyses. Action levels will be established for the SSCs at the component level, program level, or functionally through the use of the pseudo system or "performance monitoring group" concept. The actual action level will be determined based on the number of component, program or functional failures within a sufficiently bounding time period (approximately 2-3 operating cycles). Adverse trends and unacceptable levels of availability, reliability, and performance will be reviewed against established action levels. Documentation of the monitoring program failure criteria and action level targets will be contained in a documented evaluation.

Phase 4 – Monitoring Implementation

Phase 4 is the implementation of the CNP monitoring program, once the monitoring scope and criteria are established. The corrective action process will be used to address performance of fire protection and nuclear safety SSCs that do not meet performance criteria.

For HSS fire protection and nuclear safety SSCs, unacceptable levels of availability, reliability, and performance will be reviewed against the established action levels. If an action level is triggered, actions will be initiated to identify the negative trend. A plan will then be developed using the appropriate CNP process. Once the plan has been implemented, improved performance should return the SSC back to below the established action level.

A periodic assessment will be performed (e.g., at a frequency of approximately every two to three operating cycles), taking into account, where practical, industry wide operating experience. This will be conducted as part of other established assessment activities. Issues that will be addressed include:

- For systems with performance criteria, do performance criteria still effectively monitor the functions of the system? Do the criteria still monitor the effectiveness of the fire protection and NSCA systems?
- Have the supporting analyses been revised such that the performance criteria are no longer applicable or new fire protection and NSCA SSCs, programmatic elements and/ or functions need to be in scope?
- Based on the performance during the assessment period, are there any trends in system performance that should be addressed that are not being addressed?

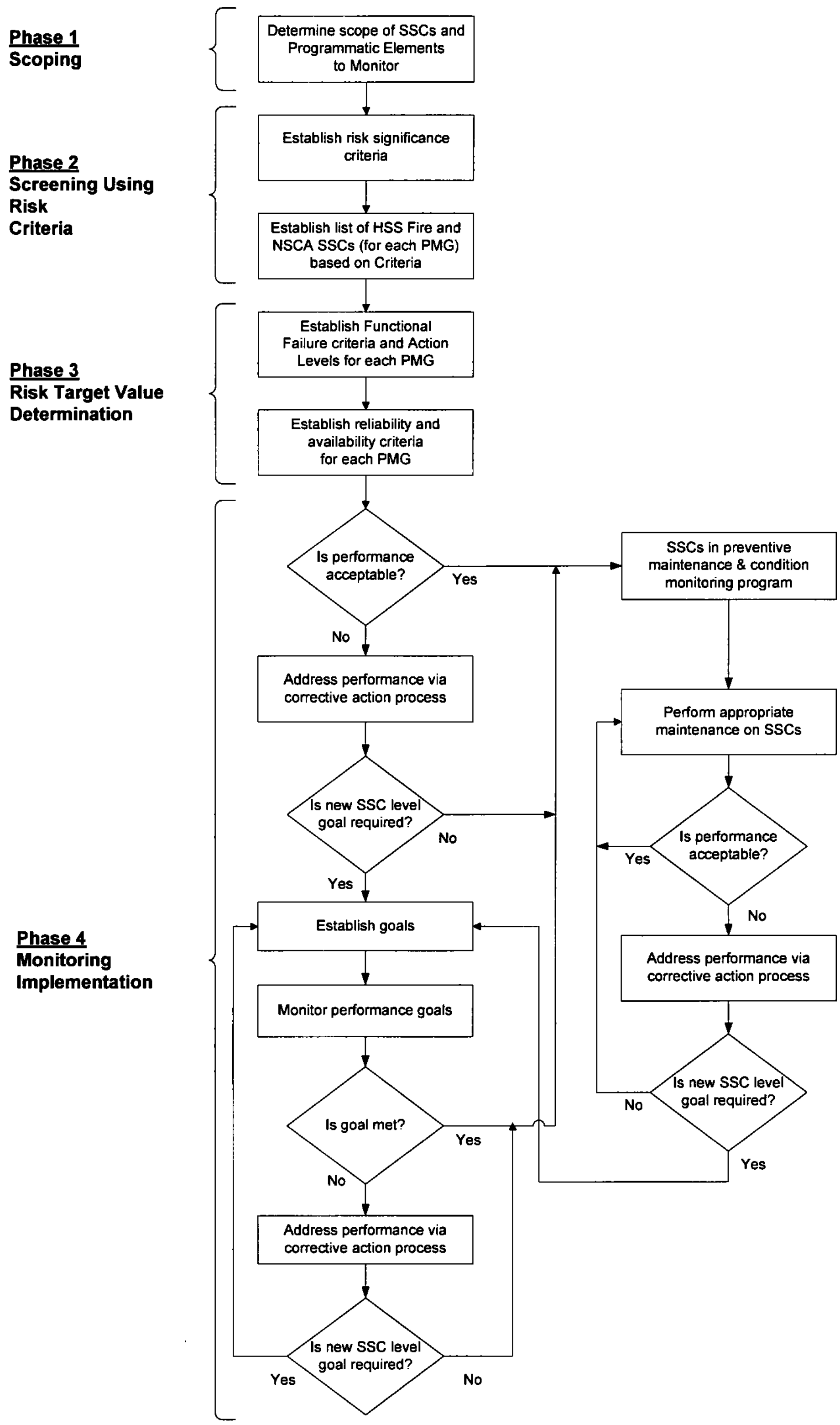

Figure 4-8 – Post-Transition NFPA 805 Monitoring Program

4.7 Program Documentation, Configuration Control, and Quality Assurance

4.7.1 Compliance with Documentation Requirements in Section 2.7.1 of NFPA 805

In accordance with the requirements and guidance in NFPA 805 Section 2.7.1 and NEI 04-02, I&M has documented analyses to support compliance with 10 CFR 50.48(c). The analyses are being performed in accordance with the CNP processes for ensuring assumptions are clearly defined, that results are easily understood, that results are clearly and consistently described, and that sufficient detail is provided to allow future review of the entire analyses.

Analyses, as defined by NFPA 805 Section 2.4, performed to demonstrate compliance with 10 CFR 50.48(c) will be maintained for the life of the plant and organized to facilitate review for accuracy and adequacy. Note these analyses do not include items such as periodic tests, hot work permits, fire impairments, etc.

The Fire Protection Design Basis Document described in Section 2.7.1.2 of NFPA 805 and necessary supporting documentation described in Section 2.7.1.3 of NFPA 805 will be created (or existing documents revised) as part of transition to 10 CFR 50.48(c) to ensure program implementation following receipt of the SE. Appropriate cross references will be established to supporting documents as required by CNP processes. The development of these FP basis documents will be completed as part of LAR implementation (See Attachment S). Figure 4-9 depicts the pre-transition to post-transition documentation evolution for CNP and associated relationships.

4.7.2 Compliance with Configuration Control Requirements in Section 2.7.2 and 2.2.9 of NFPA 805

Program documentation established, revised, or utilized in support of compliance with 10 CFR 50.48(c) will be subject to CNP configuration control processes that meet the requirements of Section 2.7.2 of NFPA 805. This includes the appropriate procedures and configuration control processes for ensuring that changes impacting the FPP are reviewed appropriately. The RI-PB post transition change process methodology will be based upon the requirements of NFPA 805, and industry guidance in NEI 04-02, and RG 1.205. These requirements are summarized in Table 4-2.

Table 4-2 Change Evaluation Guidance Summary Table

Document	Section(s)	Topic
NFPA 805	2.2(h), 2.2.9, 2.4.4, A.2.2(h), A.2.4.4, D.5	Change Evaluation
NEI 04-02	5.3, Appendix B, Appendix I, Appendix J	Change Evaluation, Change Evaluation Forms (App. I)
RG 1.205	C.2.2.4, C.3.1, C.3.2, C.4.3	Risk Evaluation, Standard License Condition, Change Evaluation Process, Fire PRA

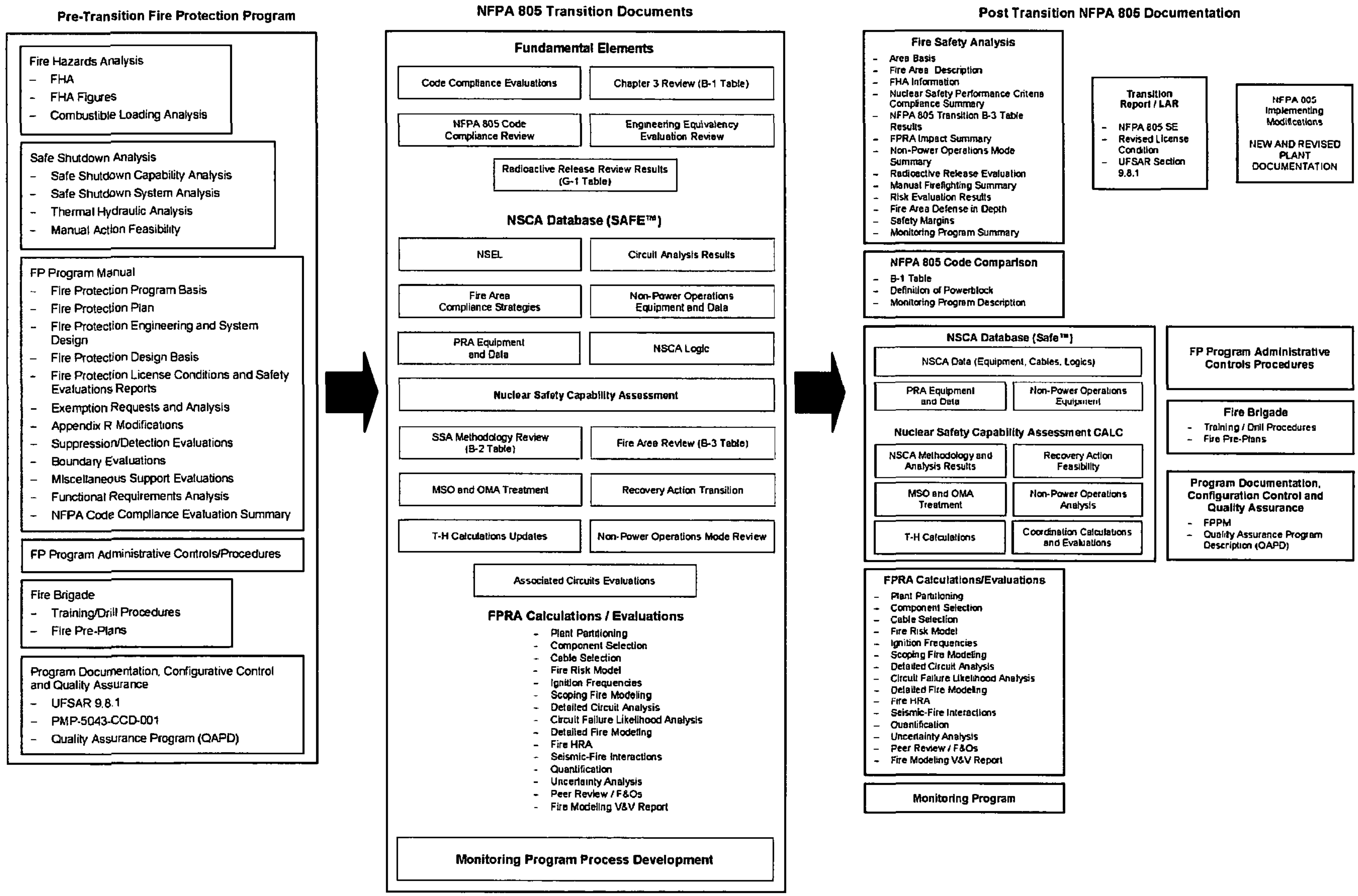

Figure 4-9 – NFPA 805 Planned Post-Transition Documents and Relationships for CNP

The Plant Change Evaluation process will be documented in a new procedure and will consists of the following 4 steps and depicted in Figure 4-10:

- Defining the Change
- Performing the Preliminary Risk Screening
- Performing the Risk Evaluation
- Evaluating the Acceptance Criteria

Change Definition

The Plant Change Evaluation process begins by defining the change or altered condition to be examined and the baseline configuration as defined by the design basis and licensing basis (NFPA 805 licensing basis post-transition).

- The baseline is defined as that plant condition or configuration that is consistent with the design basis and licensing basis (NFPA 805 licensing basis post-transition).
- The changed or altered condition or configuration that is not consistent with the design basis and licensing basis is defined as the proposed alternative.

Preliminary Risk Review

Once the definition of the change is established, a screening will then be performed to identify and resolve minor changes to the FPP. This screening will be consistent with fire protection regulatory review processes currently in place at CNP. This screening process will be modeled after the NEI 02-03 process. This process will address most administrative changes (e.g., changes to the combustible control program, organizational changes, etc.).

The characteristics of an acceptable screening process that meets the "assessment of the acceptability of risk" requirement of Section 2.4.4 of NFPA 805 are:

- The quality of the screen is sufficient to ensure that potentially greater than minimal risk increases receive detailed risk assessments appropriate to the level of risk.
- The screening process must be documented and be available for inspection by the NRC.
- The screening process does not pose undue evaluation or maintenance burden.

If any of the above is not met, proceed to the risk evaluation step.

Risk Evaluation

The screening will be followed by engineering evaluations that may include fire modeling and risk assessment techniques. The results of these evaluations will then be compared to the acceptance criteria. Changes that satisfy the acceptance criteria of NFPA 805 Section 2.4.4 and the fire protection license condition (See Attachment M to this LAR) can be implemented within the framework provided by NFPA 805. Changes that do not satisfy the acceptance criteria cannot be implemented within this framework. The acceptance criteria will require that the resultant change in CDF and LERF be consistent with the fire protection license condition. The acceptance criteria will also include consideration of defense-in-depth and safety margin, which would typically be qualitative in nature.

The risk evaluation will involve the application of fire modeling analyses and risk assessment techniques to obtain a measure of the changes in risk associated with the proposed change. In certain circumstances, an initial evaluation in the development of the risk assessment may be a

simplified analysis using bounding assumptions provided the use of such assumptions does not unnecessarily challenge the acceptance criteria discussed below.

Acceptability Determination

The Plant Change Evaluations will be assessed for acceptability using the ΔCDF (change in core damage frequency) and ΔLERF (change in large early release frequency) criteria from the license condition. The proposed changes will also be assessed to ensure it is consistent with the defense-in-depth philosophy and that sufficient safety margins are maintained.

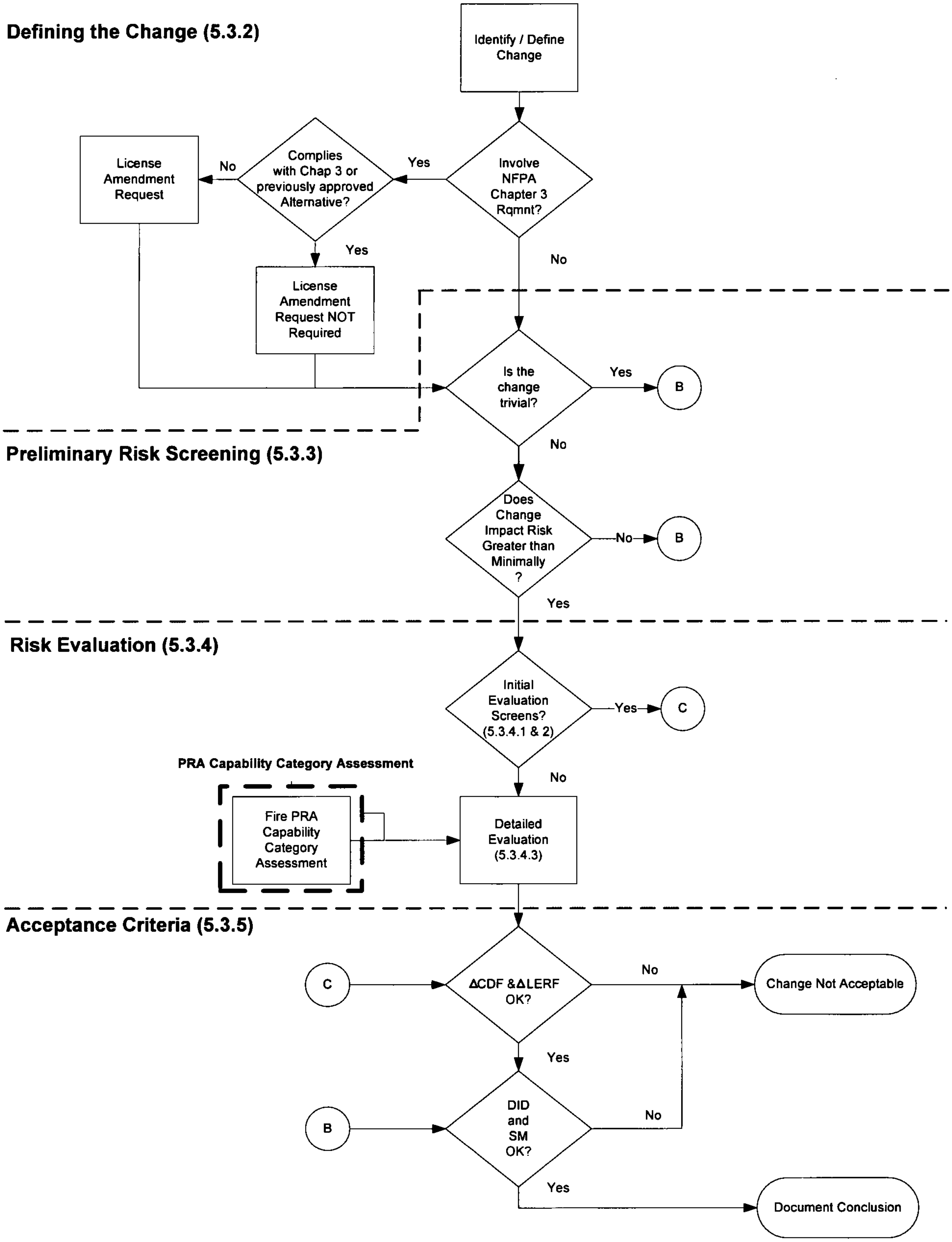

Figure 4-10 – Plant Change Evaluation [NEI 04-02 Figure 5-1]
Note references in Figure refer to NEI 04-02 Sections

The CNP FPP configuration is defined by the program documentation. To the greatest extent possible, the existing configuration control processes for modifications, calculations and analyses, and FPP license basis reviews will be utilized to maintain configuration control of the FPP documents. The configuration control procedures which govern the various CNP documents and databases that currently exist will be revised to reflect the new NFPA 805 licensing bases requirements.

Several NFPA 805 document types such as: NSCA supporting information, Non-Power Mode Review, Fire Modeling Reports, Fire Safety Assessments, risk evaluations, etc., generally require new control procedures and processes to be developed since they are new documents and databases created as a result of the transition to NFPA 805. The new procedures will be modeled after the existing processes for similar types of documents and databases. System level design basis documents will be revised to reflect the NFPA 805 role that the systems and components will play. The new procedures will be developed and existing documentation revised as part of LAR implementation (See Attachment S).

The process for capturing the impact of proposed changes to the plant on the FPP will continue to be a multiple step review. The first step of the review will be an initial screening for process users to determine if there is a potential to impact the FPP as defined under NFPA 805 through a series of screening questions/checklists contained in one or more procedures depending upon the configuration control process being used. Reviews that identify potential FPP impacts will be sent to qualified individuals (e.g., Fire Protection, Fire PRA, etc.) to ascertain the program impacts, if any. If FPP impacts are determined to exist as a result of the proposed change, the issue would be resolved by one of the following:

- Deterministic Approach: Comply with NFPA 805 Chapter 3 and 4.2.3 requirements.
- Performance-Based Approach: Utilize the NFPA 805 change process developed in accordance with NEI 04-02, RG 1.205, and the CNP NFPA 805 fire protection license condition to assess the acceptability of the proposed change. This process will be used to determine if the proposed change could be implemented "as-is" or whether prior NRC approval of the proposed change is required.

This process follows the requirements in NFPA 805 and the guidance outlined in RG 1.174 which requires the use of qualified individuals, procedures that require calculations and evaluations be subject to independent review and verification, record retention, peer review, and a corrective action program that ensures appropriate actions are taken when errors are discovered.

4.7.3 Compliance with Quality Requirements in Section 2.7.3 of NFPA 805

Fire Protection Program Quality

During the transition to 10 CFR 50.48(c), I&M performed work in accordance with the quality requirements of Section 2.7.3 of NFPA 805. The Fire Protection Quality Assurance program as outlined in the QAPD will be revised to reflect the applicable requirements of Section 2.7.3 of NFPA 805 as an implementation item (See Attachment S).

Fire PRA Quality

Configuration control of the Fire PRA model will be maintained by integrating the Fire PRA model into the existing processes used to ensure configuration control of the internal events PRA model. This process is discussed in CNP procedure 12-EHP-9010-PRA-001, “PRA Model Update Procedure” where Section 3.3 describes the process used for periodic PRA updates and

Section 3.4 describes cases where an interim update may be appropriate. The CNP PRA model update procedure complies with ASME/ANS RA-Sa-2009, Section 1-5 and ensures that CNP maintains an as-built, as-operated PRA model of the plant. The process has been peer reviewed. Quality assurance of the Fire PRA is assured via the same processes applied to the internal events model.

This process follows the guidance outlined in RG 1.174 which requires the use of qualified individuals, procedures that require calculations be subject to independent review and verification, record retention, peer review, and a corrective action program that ensures appropriate actions are taken when errors are discovered. Although the entire scope of the formal 10CFR50 Appendix B program is not applied to the PRA models or processes in general, often parts of the program are applied as a convenient method of complying with the requirements of RG 1.174. For instance, CNP Procedure 12-EHP-5040-DES-003, which addresses independent review of calculations for 10 CFR 50 Appendix B, is applied to the PRA model calculations, as well.

With respect to Quality Assurance Program requirements for independent reviews of evaluations, those existing requirements for FPP documents will remain unchanged. CNP specifically requires that the evaluations in support of the NFPA 805 LAR, exclusive of the Fire PRA, be performed within the scope of the FP QA program which requires independent review as defined by CNP Procedure PMP-2270-EVL-002, Evaluation of Fire Protection Program Changes.

As recommended by NUREG/CR-6850, the sources of uncertainty in the Fire PRA were identified and specific parameters were analyzed for sensitivity in support of the NFPA 805 Fire Risk Evaluation process. Specifically with regard to uncertainty, an uncertainty and sensitivity matrix was developed and included in the Fire PRA Uncertainty and Sensitivity Analyses, CNP Calculation PRA-FIRE-17663-015-LAR. In addition, sensitivity to uncertainty associated with specific Fire PRA parameters was addressed in this calculation. While the removal of conservatism inherent in the Fire PRA is a long-term goal, the Fire PRA results were deemed sufficient for evaluating the risk associated with this application. While I&M continues to pursue a more "realistic" estimate of fire risk, use of mean values continues to be the best estimate of fire risk. During the Fire Risk Evaluation process, the uncertainty and sensitivity associated with specific Fire PRA parameters were considerations in the evaluation of the change in risk relative to the applicable acceptance thresholds.

Specific Requirements of NFPA 805, Section 2.7.3

NFPA 805, Section 2.7.3.1 – Review

Analyses, calculations, and evaluations performed in support of compliance with 10 CFR 50.48(c) were performed in accordance with CNP procedures that require independent review.

NFPA 805, Section 2.7.3.2 – Verification and Validation

Calculational models and numerical methods used in support of compliance with 10 CFR 50.48(c) were verified and validated as required by Section 2.7.3.2 of NFPA 805.

NFPA 805, Section 2.7.3.3 – Limitations of Use

Engineering methods and numerical models used in support of compliance with 10 CFR 50.48(c) were used appropriately as required by Section 2.7.3.3 of NFPA 805.

NFPA 805, Section 2.7.3.4 – Qualification of Users

Cognizant personnel who used and applied engineering analysis and numerical methods in support of compliance with 10 CFR 50.48(c) are competent and experienced as required by Section 2.7.3.4 of NFPA 805.

For personnel performing future fire modeling or Fire PRA development and evaluation, I&M will develop and maintain qualification requirements for individuals assigned various tasks. Position Specific Guides will be developed to identify and document required training and mentoring to ensure individuals are appropriately qualified per the requirements of NFPA 805 Section 2.7.3.4 to perform assigned work. The development of these qualification requirements and position specific training will be completed as part of LAR implementation (See Attachment S).

NFPA 805, Section 2.7.3.5 – Uncertainty Analysis

Uncertainty analyses were performed as required by 2.7.3.5 of NFPA 805 and the results were considered in the context of the application.

4.8 Summary of Results

4.8.1 Results of the Fire Area Review

A summary of the NFPA 805 compliance basis and the required fire protection systems and features is provided in Table 4-3. The table provides the following information from the NEI 04-02 Table B-3 (which is provided in Attachment C):

- Fire Area / Fire Zone: Fire Area/Zone Identifier.
- Description: Fire Area/Zone Description.
- NFPA 805 Regulatory Basis: Post-transition NFPA 805 Chapter 4 compliance basis (Note: Compliance is determined on a Fire Area basis. Therefore a compliance basis is not provided for individual fire zones.)
- Required Suppression/Detection: Detection/suppression is required in the Fire Area based on NFPA 805 Chapter 4 compliance. The information is provided on a zone basis. The basis for the requirement for the fire protection system is designated as follows:
    - S – Separation Criteria: Systems required for Chapter 4 Separation Criteria in Section 4.2.3.
    - L – Licensing Action Criteria: Systems required for acceptability of NRC approved Licensing Actions (i.e., Exemptions and SEs) (Section 2.2.7).
    - E – EEEE Criteria: Systems required for acceptability of Existing Engineering Equivalency Evaluations (Section 2.2.7).
    - R – Risk Criteria: Systems required to meet the Risk Criteria for the Performance-Based Approach (Section 4.2.4).
    - D – Defense-in-depth Criteria: Systems required to maintain adequate balance of Defense-in-Depth for a Performance-Based Approach (Section 4.2.4).

Attachment W, Tables W-3 (Unit 1) and W-4 (Unit 2), contain the results of the Fire Risk Evaluations, additional risk of recovery actions, and the change in risk on a fire area basis.

4.8.2 Plant Modifications and Items to be Completed during the Implementation Phase

Planned modifications, training, programs, procedure changes, and evaluations to comply with NFPA 805 are described in Attachment S.

The Fire PRA model represents the as-built, as-operated and maintained plant as it will be configured at the completion of the transition to NFPA 805. The Fire PRA model includes credit for the implementation of the modification identified in Attachment S. Following completion of the modifications and implementation items listed in Attachment S, additional refinements may need to be incorporated into the Fire PRA model. However, these changes are not expected to be significant and will likely result in additional risk improvement in areas where limited credit for the proposed modifications was taken. No other significant plant changes are outstanding with respect to their inclusion in the Fire PRA model.

4.8.3 Supplemental Information –Other Licensee Specific Issues

4.8.3.1 None

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA1		**Unit 1 and Unit 2 Residual Heat Removal and Containment Spray Pump Area (El. 573 ft.)**	**4.2.3.2**								
AA1	1	Auxiliary Building - El. 573 ft. 0 in. - Both Units		Suppression:	Water Curtain	Y	N	Y	Y	N	Provides a fire area boundary around open stairwell
AA1	1	Auxiliary Building - El. 573 ft. 0 in. - Both Units		Detection:	Ionization	N	N	Y	N	N	
AA1	1	Auxiliary Building - El. 573 ft. 0 in. - Both Units		Feature:	None	-	-	-	-	-	
AA1	1A	Containment Spray Pump East, Auxiliary Building - El. 573 ft. 0 in. - Unit 1		Suppression:	None	-	-	-	-	-	
AA1	1A	Containment Spray Pump East, Auxiliary Building - El. 573 ft. 0 in. - Unit 1		Detection:	Ionization	N	N	Y	N	N	
AA1	1A	Containment Spray Pump East, Auxiliary Building - El. 573 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA1	1B	Containment Spray Pump West, Auxiliary Building - El. 573 ft. 0 in. - Unit 1		Suppression:	None	-	-	-	-	-	
AA1	1B	Containment Spray Pump West, Auxiliary Building - El. 573 ft. 0 in. - Unit 1		Detection:	Ionization	N	N	Y	N	N	
AA1	1B	Containment Spray Pump West, Auxiliary Building - El. 573 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA1	1C	Residual Heat Removal Pump East, Auxiliary Building - El. 573 ft. 0 in. - Unit 1		Suppression:	None	-	-	-	-	-	
AA1	1C	Residual Heat Removal Pump East, Auxiliary Building - El. 573 ft. 0 in. - Unit 1		Detection:	Ionization	N	N	Y	N	N	
AA1	1C	Residual Heat Removal Pump East, Auxiliary Building - El. 573 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA1	1D	Residual Heat Removal Pump West, Auxiliary Building - El. 573 ft. 0 in. - Unit 1		Suppression:	None	-	-	-	-	-	
AA1	1D	Residual Heat Removal Pump West, Auxiliary Building - El. 573 ft. 0 in. - Unit 1		Detection:	Ionization	N	N	Y	N	N	
AA1	1D	Residual Heat Removal Pump West, Auxiliary Building - El. 573 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA1	1E	Containment Spray Pump East, Auxiliary Building - El. 573 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA1	1E	Containment Spray Pump East, Auxiliary Building - El. 573 ft. 0 in. - Unit 2		Detection:	Ionization	N	N	Y	N	N	
AA1	1E	Containment Spray Pump East, Auxiliary Building - El. 573 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA1	1F	Containment Spray Pump West, Auxiliary Building - El. 573 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA1	1F	Containment Spray Pump West, Auxiliary Building - El. 573 ft. 0 in. - Unit 2		Detection:	Ionization	N	N	Y	N	N	
AA1	1F	Containment Spray Pump West, Auxiliary Building - El. 573 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA1	1G	Residual Heat Removal East, Auxiliary Building - El. 573 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA1	1G	Residual Heat Removal East, Auxiliary Building - El. 573 ft. 0 in. - Unit 2		Detection:	Ionization	N	N	Y	N	N	
AA1	1G	Residual Heat Removal East, Auxiliary Building - El. 573 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA1	1H	Residual Heat Removal West, Auxiliary Building - El. 573 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA1	1H	Residual Heat Removal West, Auxiliary Building - El. 573 ft. 0 in. - Unit 2		Detection:	Ionization	N	N	Y	N	N	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA1	1H	Residual Heat Removal West, Auxiliary Building - El. 573 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA1	136	Unit 1 Pipe Tunnel - El. 573 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA1	136	Unit 1 Pipe Tunnel - El. 573 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA1	136	Unit 1 Pipe Tunnel - El. 573 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA1	137	Unit 2 Pipe Tunnel - El. 573 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA1	137	Unit 2 Pipe Tunnel - El. 573 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA1	137	Unit 2 Pipe Tunnel - El. 573 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA1	138A	CVCS Hold-up Tank Area North - El. 562 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA1	138A	CVCS Hold-up Tank Area North - El. 562 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA1	138A	CVCS Hold-up Tank Area North - El. 562 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA1	138B	CVCS Hold-up Tank Area Middle - El. 562 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA1	138B	CVCS Hold-up Tank Area Middle - El. 562 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA1	138B	CVCS Hold-up Tank Area Middle - El. 562 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA1	138C	CVCS Hold-up Tank Area South - El. 562 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA1	138C	CVCS Hold-up Tank Area South - El. 562 ft. 0 in.		Detection:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA1	138C	CVCS Hold-up Tank Area South - El. 562 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2		**Unit 1 and Unit 2 Turbine Building, Main Steam Enclosures and Pipe Tunnels**	**4.2.4.2**								
AA2	2N	Pump Bay Turbine Building – El. 569 ft. 6 in. – Unit 1		Suppression:	None	-	-	-	-	-	
AA2	2N	Pump Bay Turbine Building – El. 569 ft. 6 in. – Unit 1		Detection:	None	-	-	-	-	-	
AA2	2N	Pump Bay Turbine Building – El. 569 ft. 6 in. – Unit 1		Feature:	None	-	-	-	-	-	
AA2	2S	Pump Bay Turbine Building – El. 569 ft. 6 in. – Unit 2		Suppression:	None	-	-	-	-	-	
AA2	2S	Pump Bay Turbine Building – El. 569 ft. 6 in. – Unit 2		Detection:	None	-	-	-	-	-	
AA2	2S	Pump Bay Turbine Building – El. 569 ft. 6 in. – Unit 2		Feature:	None	-	-	-	-	-	
AA2	28	(Back-up Diesel Fire Pump Room) Sodium Hypochlorite System Room - El. 591 ft. 0 in. - Unit 1		Suppression:	Wet Pipe	N	N	Y	N	N	
AA2	28	(Back-up Diesel Fire Pump Room) Sodium Hypochlorite System Room - El. 591 ft. 0 in. - Unit 1		Detection:	None	-	-	-	-	-	
AA2	28	(Back-up Diesel Fire Pump Room) Sodium Hypochlorite System Room - El. 591 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA2	30	Back-up Diesel Fire Pump Room - El. 591 ft. 0 in. - Unit 2		Suppression:	Wet Pipe	N	N	Y	N	N	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA2	30	Back-up Diesel Fire Pump Room - El. 591 ft. 0 in. - Unit 2		Detection:	None	-	-	-	-	-	
AA2	30	Back-up Diesel Fire Pump Room - El. 591 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA2	77	Welding Shop Unit 1 - El. 591 ft. 0 in. - Turbine Building		Suppression:	Wet Pipe	N	N	Y	N	N	
AA2	77	Welding Shop Unit 1 - El. 591 ft. 0 in. - Turbine Building		Detection:	None	-	-	-	-	-	
AA2	77	Welding Shop Unit 1 - El. 591 ft. 0 in. - Turbine Building		Feature:	None	-	-	-	-	-	
AA2	78	Heating Boiler Room Unit 1 - El. 591 ft. 0 in. - Turbine Building		Suppression:	Wet Pipe	N	N	Y	N	N	
AA2	78	Heating Boiler Room Unit 1 - El. 591 ft. 0 in. - Turbine Building		Detection:	None	-	-	-	-	-	
AA2	78	Heating Boiler Room Unit 1 - El. 591 ft. 0 in. - Turbine Building		Feature:	None	-	-	-	-	-	
AA2	79	Turbine Room Unit 1 (N.E. Portion) - El. 591 ft. 0 in.		Suppression:	Wet Pipe	Y	N	Y	Y	N	
AA2	79	Turbine Room Unit 1 (N.E. Portion) - El. 591 ft. 0 in.		Detection:	Ionization	Y	N	Y	Y	N	
AA2	79	Turbine Room Unit 1 (N.E. Portion) - El. 591 ft. 0 in.		Feature:	ERFBS	Y	N	N	Y	N	1-hour wrapped raceway enclosure
AA2	80	Turbine Room Unit 1 (S.E. Portion) - El. 591 ft. 0 in.		Suppression:	Wet Pipe	N	N	Y	Y	N	
AA2	80	Turbine Room Unit 1 (S.E. Portion) - El. 591 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	80	Turbine Room Unit 1 (S.E. Portion) - El. 591 ft. 0 in.		Feature:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA2	81	Turbine Room Unit 1 (S.W. Portion) - El. 591 ft. 0 in.		Suppression:	Wet Pipe	N	N	Y	Y	N	
AA2	81	Turbine Room Unit 1 (S.W. Portion) - El. 591 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	81	Turbine Room Unit 1 (S.W. Portion) - El. 591 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	82	Turbine Room Unit 1 (N.W. Portion) - El. 591 ft. 0 in.		Suppression:	Wet Pipe	N	N	Y	Y	N	
AA2	82	Turbine Room Unit 1 (N.W. Portion) - El. 591 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	82	Turbine Room Unit 1 (N.W. Portion) - El. 591 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	83	Turbine Room Unit 1 Lube Oil Room - El. 591 ft. 0 in.		Suppression:	Wet Pipe	N	N	Y	Y	N	
AA2	83	Turbine Room Unit 1 Lube Oil Room - El. 591 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	83	Turbine Room Unit 1 Lube Oil Room - El. 591 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	84	Turbine Room Unit 2 (N.E. Portion) - El. 591 ft. 0 in.		Suppression:	Wet Pipe	N	N	Y	Y	N	
AA2	84	Turbine Room Unit 2 (N.E. Portion) - El. 591 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	84	Turbine Room Unit 2 (N.E. Portion) - El. 591 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	85	Turbine Room Unit 2 (S.E. Portion) - El. 591 ft. 0 in.		Suppression:	Wet Pipe	Y	N	Y	Y	N	
AA2	85	Turbine Room Unit 2 (S.E. Portion) - El. 591 ft. 0 in.		Detection:	Ionization	Y	N	Y	Y	N	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA2	85	Turbine Room Unit 2 (S.E. Portion) - El. 591 ft. 0 in.		Feature:	ERFBS	Y	N	N	Y	N	1-hour wrapped raceway enclosures
AA2	86	Turbine Room Unit 2 (S.W. Portion) - El. 591 ft. 0 in.		Suppression:	Wet Pipe	N	N	Y	Y	N	
AA2	86	Turbine Room Unit 2 (S.W. Portion) - El. 591 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	86	Turbine Room Unit 2 (S.W. Portion) - El. 591 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	87	Turbine Room Unit 2 (N.W. Portion) - El. 591 ft. 0 in.		Suppression:	Wet Pipe	N	N	Y	Y	N	
AA2	87	Turbine Room Unit 2 (N.W. Portion) - El. 591 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	87	Turbine Room Unit 2 (N.W. Portion) - El. 591 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	88	Turbine Room Unit 2 Lube Oil Room - El. 591 ft. 0 in.		Suppression:	Wet Pipe	N	N	Y	Y	N	
AA2	88	Turbine Room Unit 2 Lube Oil Room - El. 591 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	88	Turbine Room Unit 2 Lube Oil Room - El. 591 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	89	Turbine Room Unit 2 Misc. Oil Room - El. 591 ft. 0 in.		Suppression:	Wet Pipe	N	N	Y	Y	N	
AA2	89	Turbine Room Unit 2 Misc. Oil Room - El. 591 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	89	Turbine Room Unit 2 Misc. Oil Room - El. 591 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	90	Turbine Room Unit 1 (N.E. Portion) - El. 609 ft. 0 in.		Suppression:	Water Curtain	N	N	Y	Y	N	Railroad overhead roll-up fire door

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA2	90	Turbine Room Unit 1 (N.E. Portion) - El. 609 ft. 0 in.		Suppression:	Wet Pipe	N	N	Y	Y	N	
AA2	90	Turbine Room Unit 1 (N.E. Portion) - El. 609 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	90	Turbine Room Unit 1 (N.E. Portion) - El. 609 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	91	Turbine Room Unit 1 (S.E. Portion) - El. 609 ft. 0 in.		Suppression:	Wet Pipe	N	N	Y	Y	N	
AA2	91	Turbine Room Unit 1 (S.E. Portion) - El. 609 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	91	Turbine Room Unit 1 (S.E. Portion) - El. 609 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	92	Turbine Room Unit 1 (S.W. Portion) - El. 609 ft. 0 in.		Suppression:	Wet Pipe	N	N	Y	Y	N	
AA2	92	Turbine Room Unit 1 (S.W. Portion) - El. 609 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	92	Turbine Room Unit 1 (S.W. Portion) - El. 609 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	93	Turbine Room Unit 1 (N.W. Portion) - El. 609 ft. 0 in.		Suppression:	Wet Pipe	N	N	Y	Y	N	
AA2	93	Turbine Room Unit 1 (N.W. Portion) - El. 609 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	93	Turbine Room Unit 1 (N.W. Portion) - El. 609 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	94	Turbine Room Unit 1 Office Space - El. 609 ft. 0 in.		Suppression:	Wet Pipe	N	N	Y	Y	N	
AA2	94	Turbine Room Unit 1 Office Space - El. 609 ft. 0 in.		Detection:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA2	94	Turbine Room Unit 1 Office Space - El. 609 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	95	Turbine Room Unit 1 Turb. Oil Tank Room - El. 605 ft. 11 in.		Suppression:	Wet Pipe	N	N	Y	Y	N	
AA2	95	Turbine Room Unit 1 Turb. Oil Tank Room - El. 605 ft. 11 in.		Suppression:	Manual CO2	N	N	Y	Y	N	
AA2	95	Turbine Room Unit 1 Turb. Oil Tank Room - El. 605 ft. 11 in.		Detection:	None	-	-	-	-	-	
AA2	95	Turbine Room Unit 1 Turb. Oil Tank Room - El. 605 ft. 11 in.		Feature:	None	-	-	-	-	-	
AA2	96	Turbine Room Unit 2 (N.E. Portion) - El. 609 ft. 0 in.		Suppression:	Wet Pipe	N	N	Y	Y	N	
AA2	96	Turbine Room Unit 2 (N.E. Portion) - El. 609 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	96	Turbine Room Unit 2 (N.E. Portion) - El. 609 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	97	Turbine Room Unit 2 (S. E. Portion) - El. 609 ft. 0 in.		Suppression:	Water Curtain	N	N	Y	Y	N	Railroad overhead roll-up fire door
AA2	97	Turbine Room Unit 2 (S. E. Portion) - El. 609 ft. 0 in.		Suppression:	Wet Pipe	N	N	Y	Y	N	
AA2	97	Turbine Room Unit 2 (S. E. Portion) - El. 609 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	97	Turbine Room Unit 2 (S. E. Portion) - El. 609 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	98	Turbine Room Unit 2 (S.W. Portion) - El. 609 ft. 0 in.		Suppression:	Wet Pipe	N	N	Y	Y	N	
AA2	98	Turbine Room Unit 2 (S.W. Portion) - El. 609 ft. 0 in.		Detection:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA2	98	Turbine Room Unit 2 (S.W. Portion) - El. 609 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	99	Turbine Room Unit 2 (N.W. Portion) - El. 609 ft. 0 in.		Suppression:	Wet Pipe	N	N	Y	Y	N	
AA2	99	Turbine Room Unit 2 (N.W. Portion) - El. 609 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	99	Turbine Room Unit 2 (N.W. Portion) - El. 609 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	100	Turbine Room Unit 2 Turbine Oil Tank Room - El. 609 ft. 0 in.		Suppression:	Wet Pipe	N	N	Y	Y	N	
AA2	100	Turbine Room Unit 2 Turbine Oil Tank Room - El. 609 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	100	Turbine Room Unit 2 Turbine Oil Tank Room - El. 609 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	108	West Steam Valve Enclosure - Unit 1 - El. 635 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA2	108	West Steam Valve Enclosure - Unit 1 - El. 635 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	108	West Steam Valve Enclosure - Unit 1 - El. 635 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	109	West Steam Valve Enclosure - Unit 2 - El. 635 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA2	109	West Steam Valve Enclosure - Unit 2 - El. 635 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	109	West Steam Valve Enclosure - Unit 2 - El. 635 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	110	Main Steam Accessway - Unit 1 - El. 587 ft. 0 in.		Suppression:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA2	110	Main Steam Accessway - Unit 1 - El. 587 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	110	Main Steam Accessway - Unit 1 - El. 587 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	111	Main Steam Accessway - Unit 2 - El. 587 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA2	111	Main Steam Accessway - Unit 2 - El. 587 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	111	Main Steam Accessway - Unit 2 - El. 587 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	126	Tech Support Center - El. 633 ft. 0 in. - Both Units		Suppression:	Water Curtain	N	N	N	Y	N	
AA2	126	Tech Support Center - El. 633 ft. 0 in. - Both Units		Detection:	Ionization	N	N	N	Y	N	
AA2	126	Tech Support Center - El. 633 ft. 0 in. - Both Units		Feature:	None	-	-	-	-	-	
AA2	127	TSC, UPS Inverter and Battery Rooms - El. 650 ft. 0 in. - Both Units		Suppression:	None	-	-	-	-	-	
AA2	127	TSC, UPS Inverter and Battery Rooms - El. 650 ft. 0 in. - Both Units		Detection:	Ionization	N	N	N	Y	N	
AA2	127	TSC, UPS Inverter and Battery Rooms - El. 650 ft. 0 in. - Both Units		Feature:	None	-	-	-	-	-	
AA2	129	Unit 1 Turbine Deck - El. 633 ft. 0 in.		Suppression:	Water Curtain	N	N	Y	Y	N	East wall adjacent to the main transformer
AA2	129	Unit 1 Turbine Deck - El. 633 ft. 0 in.		Suppression:	Manual CO2	N	N	N	Y	N	Provided for the TG
AA2	129	Unit 1 Turbine Deck - El. 633 ft. 0 in.		Suppression:	Pre-Action	N	N	N	Y	N	Provided for the TG under skirt
AA2	129	Unit 1 Turbine Deck - El. 633 ft. 0 in.		Detection:	Thermal	N	N	Y	Y	N	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		S	L	E	R	D	Required Fire Protection Feature and System Notes
AA2	129	Unit 1 Turbine Deck - El. 633 ft. 0 in.		Detection:	Ionization	N	N	N	Y	N	
AA2	129	Unit 1 Turbine Deck - El. 633 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	129	Unit 1 Turbine Deck - El. 633 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	130	Unit 2 Turbine Deck - El. 633 ft. 0 in.		Suppression:	Manual CO2	N	N	N	Y	N	Provided for the TG
AA2	130	Unit 2 Turbine Deck - El. 633 ft. 0 in.		Suppression:	Pre-Action	N	N	N	Y	N	Provided for the TG under skirt
AA2	130	Unit 2 Turbine Deck - El. 633 ft. 0 in.		Suppression:	Water Curtain	N	N	Y	Y	N	East wall adjacent to the main transformer
AA2	130	Unit 2 Turbine Deck - El. 633 ft. 0 in.		Detection:	Thermal	N	N	Y	Y	N	
AA2	130	Unit 2 Turbine Deck - El. 633 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	131A	Containment Cooling Area - El. 633 ft. 0 in.		Suppression:	Wet Pipe	N	N	N	N	N	
AA2	131A	Containment Cooling Area - El. 633 ft. 0 in.		Detection:	Ionization	N	N	N	Y	N	
AA2	131A	Containment Cooling Area - El. 633 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	139	Turbine Room Sump - El. 570 ft. 9 in.		Suppression:	None	-	-	-	-	-	
AA2	139	Turbine Room Sump - El. 570 ft. 9 in.		Detection:	None	-	-	-	-	-	
AA2	139	Turbine Room Sump - El. 570 ft. 9 in.		Feature:	None	-	-	-	-	-	
AA2	140	Turbine Caustic and Acid Storage Tank Area - El. 569 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA2	140	Turbine Caustic and Acid Storage Tank Area - El. 569 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	140	Turbine Caustic and Acid Storage Tank Area - El. 569 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	141	Turbine Pump Pit - El. 571 ft. 0 in.		Suppression:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA2	141	Turbine Pump Pit - El. 571 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2	141	Turbine Pump Pit - El. 571 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA2	142	Screen House - El. 591 ft. 0 in. - Both Units		Suppression:	None	-	-	-	-	-	
AA2	142	Screen House - El. 591 ft. 0 in. - Both Units		Detection:	None	-	-	-	-	-	
AA2	142	Screen House - El. 591 ft. 0 in. - Both Units		Feature:	None	-	-	-	-	-	
AA2C		**Unit 1 and Unit 2 Sub-Basement and Essential Service Water Pipe Tunnels**	**4.2.3.2**								
AA2C	112	Essential Service Water Pipe Tunnel - Unit 1 - El. 570 ft. 6 in.		Suppression:	None	-	-	-	-	-	
AA2C	112	Essential Service Water Pipe Tunnel - Unit 1 - El. 570 ft. 6 in.		Detection:	None	-	-	-	-	-	
AA2C	112	Essential Service Water Pipe Tunnel - Unit 1 - El. 570 ft. 6 in.		Feature:	None	-	-	-	-	-	
AA2C	113	Essential Service Water Pipe Tunnel - Unit 2 - El. 570 ft. 6 in.		Suppression:	None	-	-	-	-	-	
AA2C	113	Essential Service Water Pipe Tunnel - Unit 2 - El. 570 ft. 6 in.		Detection:	None	-	-	-	-	-	
AA2C	113	Essential Service Water Pipe Tunnel - Unit 2 - El. 570 ft. 6 in.		Feature:	None	-	-	-	-	-	
AA2C	114	Essential Service Water Pipe Tunnel - Unit 1 - El. 587 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA2C	114	Essential Service Water Pipe Tunnel - Unit 1 - El. 587 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2C	114	Essential Service Water Pipe Tunnel - Unit 1 - El. 587 ft. 0 in.		Feature:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA2C	115	Essential Service Water Pipe Tunnel - Unit 2 - El. 587 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA2C	115	Essential Service Water Pipe Tunnel - Unit 2 - El. 587 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA2C	115	Essential Service Water Pipe Tunnel - Unit 2 - El. 587 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA3		**Unit 1 and Unit 2 Auxiliary Building and Fuel Handling Areas (El. 609 ft., 633 ft. and 650 ft.)**	**4.2.4.2**								
AA3	3	Drumming/Drum Storage - El. 587 ft. 0 in.		Suppression:	Pre-Action	N	N	Y	N	N	Drumming area
AA3	3	Drumming/Drum Storage - El. 587 ft. 0 in.		Detection:	Ionization	N	N	Y	Y	N	
AA3	3	Drumming/Drum Storage - El. 587 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA3	31	Concrete Mixing Building/Drumming Area - El. 609 ft. 0 in.		Suppression:	Pre-Action	N	N	Y	N	N	
AA3	31	Concrete Mixing Building/Drumming Area - El. 609 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA3	31	Concrete Mixing Building/Drumming Area - El. 609 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA3	32	Cask Handling Area - El. 609 ft. 0 in. - Both Units		Suppression:	Pre-Action	N	N	Y	N	N	
AA3	32	Cask Handling Area - El. 609 ft. 0 in. - Both Units		Detection:	Ionization	N	N	Y	Y	N	
AA3	32	Cask Handling Area - El. 609 ft. 0 in. - Both Units		Feature:	None	-	-	-	-	-	
AA3	35	Instrument Calibration Room - El. 609 ft. 0 in.		Suppression:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA3	35	Instrument Calibration Room - El. 609 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA3	35	Instrument Calibration Room - El. 609 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA3	36	Spent Fuel Pit Heat Exchanger Pump Room - El. 609 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA3	36	Spent Fuel Pit Heat Exchanger Pump Room - El. 609 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA3	36	Spent Fuel Pit Heat Exchanger Pump Room - El. 609 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA3	48	New Fuel Storage Room - El. 633 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA3	48	New Fuel Storage Room - El. 633 ft. 0 in.		Detection:	Ionization	N	N	Y	Y	N	
AA3	48	New Fuel Storage Room - El. 633 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA3	49	HVAC Vestibule - El. 633 ft. 0 in. - Unit 1		Suppression:	None	-	-	-	-	-	
AA3	49	HVAC Vestibule - El. 633 ft. 0 in. - Unit 1		Detection:	Ionization	N	N	Y	Y	N	
AA3	49	HVAC Vestibule - El. 633 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA3	50	HVAC Vestibule - El. 633 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA3	50	HVAC Vestibule - El. 633 ft. 0 in. - Unit 2		Detection:	Ionization	N	N	Y	Y	N	
AA3	50	HVAC Vestibule - El. 633 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA3	51	Auxiliary Building - El. 633 ft. 0 in. (East End) - Both Units		Suppression:	Pre-Action	N	N	Y	N	N	
AA3	51	Auxiliary Building - El. 633 ft. 0 in. (East End) - Both Units		Suppression:	Water Curtain	N	N	Y	Y	N	Provides a fire zone boundary around open stairwell

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA3	51	Auxiliary Building - El. 633 ft. 0 in. (East End) - Both Units		Detection:	Ionization	N	N	Y	Y	N	
AA3	51	Auxiliary Building - El. 633 ft. 0 in. (East End) - Both Units		Feature:	None	-	-	-	-	-	
AA3	52	Auxiliary Building - El. 633 ft. 0 in. (West End) - Both Units		Suppression:	Water Curtain	N	N	Y	Y	N	Provides a fire zone boundary around open stairwell
AA3	52	Auxiliary Building - El. 633 ft. 0 in. (West End) - Both Units		Suppression:	Pre-Action	N	N	Y	N	N	
AA3	52	Auxiliary Building - El. 633 ft. 0 in. (West End) - Both Units		Detection:	Ionization	N	N	Y	Y	N	Actuates Suppression
AA3	52	Auxiliary Building - El. 633 ft. 0 in. (West End) - Both Units		Feature:	None	-	-	-	-	-	
AA3	69	Auxiliary Building - El. 633 ft. 0 in. and 650 ft. 0 in. - Both Units		Suppression:	None	-	-	-	-	-	
AA3	69	Auxiliary Building - El. 633 ft. 0 in. and 650 ft. 0 in. - Both Units		Detection:	Ionization	N	N	Y	Y	N	
AA3	69	Auxiliary Building - El. 633 ft. 0 in. and 650 ft. 0 in. - Both Units		Feature:	None	-	-	-	-	-	
AA3	106	Aux. F.W. Battery Room #1 - Auxiliary Building - El. 633 ft. 0 in. - Unit 1		Suppression:	None	-	-	-	-	-	
AA3	106	Aux. F.W. Battery Room #1 - Auxiliary Building - El. 633 ft. 0 in. - Unit 1		Detection:	Thermal	N	N	Y	Y	N	
AA3	106	Aux. F.W. Battery Room #1 - Auxiliary Building - El. 633 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA3	107	Aux. F.W. Battery Room #2 - El. 633 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA3	107	Aux. F.W. Battery Room #2 - El. 633 ft. 0 in. - Unit 2		Detection:	Thermal	N	N	Y	Y	N	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA3	107	Aux. F.W. Battery Room #2 - El. 633 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA5/6		**Auxiliary Building (El. 587 ft.)**	**4.2.4.2**								
AA5/6	4	Sampling Room, Auxiliary Building - El. 587 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA5/6	4	Sampling Room, Auxiliary Building - El. 587 ft. 0 in.		Detection:	Ionization	N	N	N	Y	N	
AA5/6	4	Sampling Room, Auxiliary Building - El. 587 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA5/6	5	Auxiliary Building - El. 587 ft. 0 in. (East End) - Both Units		Suppression:	Pre-Action	N	N	Y	N	N	
AA5/6	5	Auxiliary Building - El. 587 ft. 0 in. (East End) - Both Units		Suppression:	Water Curtain	Y	N	Y	Y	N	Provides a fire area boundary around open stairwell
AA5/6	5	Auxiliary Building - El. 587 ft. 0 in. (East End) - Both Units		Detection:	Ionization	N	N	Y	Y	N	
AA5/6	5	Auxiliary Building - El. 587 ft. 0 in. (East End) - Both Units		Detection:	Thermal	N	N	N	Y	N	
AA5/6	5	Auxiliary Building - El. 587 ft. 0 in. (East End) - Both Units		Feature:	None	-	-	-	-	-	
AA5/6	6A	Auxiliary Building Pipe Tunnel – El. 601 ft. 0 in. and El. 609 ft. 0 in. – Both Units		Suppression:	None	-	-	-	-	-	
AA5/6	6A	Auxiliary Building Pipe Tunnel – El. 601 ft. 0 in. and El. 609 ft. 0 in. – Both Units		Detection:	None	-	-	-	-	-	
AA5/6	6A	Auxiliary Building Pipe Tunnel – El. 601 ft. 0 in. and El. 609 ft. 0 in. – Both Units		Feature:	None	-	-	-	-	-	
AA5/6	6M	Auxiliary Building - El. 587 ft. 0 in. (Middle Section of the West End) - Both Units		Suppression:	Pre-Action	N	N	Y	N	N	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA5/6	6M	Auxiliary Building - El. 587 ft. 0 in. (Middle Section of the West End) - Both Units		Detection:	Ionization	N	N	Y	Y	N	
AA5/6	6M	Auxiliary Building - El. 587 ft. 0 in. (Middle Section of the West End) - Both Units		Feature:	None	-	-	-	-	-	
AA5/6	6N	Auxiliary Building - El. 587 ft. 0 in. (North Section of West End) - Unit 1		Suppression:	Pre-Action	N	N	Y	N	N	
AA5/6	6N	Auxiliary Building - El. 587 ft. 0 in. (North Section of West End) - Unit 1		Suppression:	Water Curtain	Y	N	Y	Y	N	Provides a fire area boundary around open stairwell
AA5/6	6N	Auxiliary Building - El. 587 ft. 0 in. (North Section of West End) - Unit 1		Detection:	Ionization	N	N	Y	Y	N	
AA5/6	6N	Auxiliary Building - El. 587 ft. 0 in. (North Section of West End) - Unit 1		Feature:	None	-	-	-	-	-	
AA5/6	6S	Auxiliary Building - El. 587 ft. 0 in. (South Section of the West End) - Unit 2		Suppression:	Pre-Action	N	N	Y	N	N	
AA5/6	6S	Auxiliary Building - El. 587 ft. 0 in. (South Section of the West End) - Unit 2		Suppression:	Water Curtain	Y	N	Y	Y	N	Provides a fire area boundary around open stairwell
AA5/6	6S	Auxiliary Building - El. 587 ft. 0 in. (South Section of the West End) - Unit 2		Detection:	Ionization	N	N	Y	Y	N	
AA5/6	6S	Auxiliary Building - El. 587 ft. 0 in. (South Section of the West End) - Unit 2		Feature:	None	-	-	-	-	-	
AA5/6	61	Spray Additive Tank Room - El. 587 ft. 0 in. - Both Units		Suppression:	None	-	-	-	-	-	
AA5/6	61	Spray Additive Tank Room - El. 587 ft. 0 in. - Both Units		Detection:	Ionization	N	N	Y	Y	N	
AA5/6	61	Spray Additive Tank Room - El. 587 ft. 0 in. - Both Units		Feature:	None	-	-	-	-	-	
AA5/6	64A	Safety Injection Pump North - El. 587 ft. 0 in. - Unit 1		Suppression:	Pre-Action	N	N	Y	Y	N	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA5/6	64A	Safety Injection Pump North - El. 587 ft. 0 in. - Unit 1		Detection:	Ionization	N	N	Y	Y	N	
AA5/6	64A	Safety Injection Pump North - El. 587 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA5/6	64B	Safety Injection Pump South - El. 587 ft. 0 in. - Unit 1		Suppression:	Pre-Action	N	N	Y	Y	N	
AA5/6	64B	Safety Injection Pump South - El. 587 ft. 0 in. - Unit 1		Detection:	Ionization	N	N	Y	Y	N	
AA5/6	64B	Safety Injection Pump South - El. 587 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA5/6	65A	Safety Injection Pump South - El. 587 ft. 0 in. - Unit 2		Suppression:	Pre-Action	N	N	Y	Y	N	
AA5/6	65A	Safety Injection Pump South - El. 587 ft. 0 in. - Unit 2		Detection:	Ionization	N	N	Y	Y	N	
AA5/6	65A	Safety Injection Pump South - El. 587 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA5/6	65B	Safety Injection Pump North - El. 587 ft. 0 in. 0 - Unit 2		Suppression:	Pre-Action	N	N	Y	Y	N	
AA5/6	65B	Safety Injection Pump North - El. 587 ft. 0 in. 0 - Unit 2		Detection:	Ionization	N	N	Y	Y	N	
AA5/6	65B	Safety Injection Pump North - El. 587 ft. 0 in. 0 - Unit 2		Feature:	None	-	-	-	-	-	
AA7		**Unit 1 Quadrant 1 Cable Tunnel (El. 596 ft.)**	**4.2.3.2**								
AA7	7	Quadrant 1 Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 1		Suppression:	Manual CO2	N	N	Y	Y	N	
AA7	7	Quadrant 1 Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 1		Detection:	Ionization	N	N	Y	N	N	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA7	7	Quadrant 1 Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 1		Detection:	Infrared	N	N	Y	N	N	
AA7	7	Quadrant 1 Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA8		**Unit 1 Quadrant 4 Cable Tunnel (El. 596 ft.)**	**4.2.3.2**								
AA8	8	Quadrant 4 Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 1		Suppression:	Manual CO2	N	N	Y	N	N	Cable tunnel (not provided in two east cubicles)
AA8	8	Quadrant 4 Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 1		Detection:	Infrared	N	N	Y	N	N	
AA8	8	Quadrant 4 Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 1		Detection:	Ionization	N	N	Y	N	N	
AA8	8	Quadrant 4 Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA9		**Unit 1 Quadrant 3M & 3N Cable Tunnel (El. 596 ft.)**	**4.2.4.2**								
AA9	9	Quadrant 3N Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 1		Suppression:	Manual CO2	N	N	Y	Y	N	Cable tunnel (not provided in west cubicles)
AA9	9	Quadrant 3N Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 1		Detection:	Infrared	N	N	Y	Y	N	
AA9	9	Quadrant 3N Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 1		Detection:	Ionization	N	N	Y	Y	N	
AA9	9	Quadrant 3N Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA9	10	Quadrant 3M Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 1		Suppression:	Manual CO2	N	N	Y	N	N	Cable tunnel (not provided in west cubicles)
AA9	10	Quadrant 3M Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 1		Detection:	Infrared	N	N	Y	Y	N	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA9	10	Quadrant 3M Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 1		Detection:	Ionization	N	N	Y	Y	N	
AA9	10	Quadrant 3M Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA9	116	RW, CS, PW Tank Area Pipe Tunnel - Unit 1 - El. 593 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA9	116	RW, CS, PW Tank Area Pipe Tunnel - Unit 1 - El. 593 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA9	116	RW, CS, PW Tank Area Pipe Tunnel - Unit 1 - El. 593 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA10		**Unit 1 Quadrant 3S Cable Tunnel (El. 596 ft.)**	**4.2.4.2**								
AA10	11	Quadrant 3S Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 1		Suppression:	Manual CO2	N	N	Y	N	N	Cable tunnel (not in corridor between quadrants)
AA10	11	Quadrant 3S Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 1		Detection:	Ionization	N	N	Y	Y	N	
AA10	11	Quadrant 3S Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 1		Detection:	Infrared	N	N	Y	Y	N	
AA10	11	Quadrant 3S Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA11		**Unit 1 Quadrant 2 Piping Tunnel (El. 591 ft.)**	**4.2.4.2**								
AA11	12	Quadrant 2 Piping Tunnel - El. 591 ft. 0 in. - Unit 1		Suppression:	None	-	-	-	-	-	
AA11	12	Quadrant 2 Piping Tunnel - El. 591 ft. 0 in. - Unit 1		Detection:	None	-	-	-	-	-	
AA11	12	Quadrant 2 Piping Tunnel - El. 591 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA12		**Unit 1 Diesel Generator Oil Pump Room (El. 587')**	**4.2.3.2**								
AA12	13	Diesel Oil Pump Room - El. 587 ft. 0 in. - Unit 1		Suppression:	Automatic CO2	N	N	N	N	N	
AA12	13	Diesel Oil Pump Room - El. 587 ft. 0 in. - Unit 1		Detection:	Thermal	N	N	Y	N	N	Actuates Suppression
AA12	13	Diesel Oil Pump Room - El. 587 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA13		**Unit 1 Transformer Room (El. 591 ft.)**	**4.2.3.2**								
AA13	14	Transformer Room - El. 591 ft. 0 in. - Unit 1		Suppression:	None	-	-	-	-	-	
AA13	14	Transformer Room - El. 591 ft. 0 in. - Unit 1		Detection:	Ionization	N	N	Y	N	N	
AA13	14	Transformer Room - El. 591 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA14		**Unit 1 CD Diesel Generator Room (El. 587 ft.)**	**4.2.4.2**								
AA14	15	1CD Diesel Generator Room - El. 587 ft. 0 in. - Unit 1		Suppression:	Automatic CO2	Y	N	Y	Y	N	
AA14	15	1CD Diesel Generator Room - El. 587 ft. 0 in. - Unit 1		Detection:	Thermal	Y	N	Y	Y	N	Actuates Suppression
AA14	15	1CD Diesel Generator Room - El. 587 ft. 0 in. - Unit 1		Feature:	ERFBS	Y	N	N	Y	N	1-hour wrapped raceway enclosures
AA15		**Unit 1 AB Diesel Generator Room (El. 587 ft.)**	**4.2.4.2**								
AA15	16	1AB Diesel Generator Room - El. 587 ft. 0 in. - Unit 1		Suppression:	Automatic CO2	N	N	Y	Y	N	
AA15	16	1AB Diesel Generator Room - El. 587 ft. 0 in. - Unit 1		Detection:	Thermal	N	N	Y	Y	N	Actuates Suppression

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA15	16	1AB Diesel Generator Room - El. 587 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA16		**Unit 1 West Motor Driven Auxiliary Feedwater Pump Room (El. 591 ft.)**	**4.2.3.2**								
AA16	17A	West Aux. Feed Pump Room - El. 591 ft. 0 in. - Unit 1		Suppression:	None	-	-	-	-	-	
AA16	17A	West Aux. Feed Pump Room - El. 591 ft. 0 in. - Unit 1		Detection:	None	-	-	-	-	-	
AA16	17A	West Aux. Feed Pump Room - El. 591 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA17		**Unit 2 West Motor Driven Auxiliary Feedwater Pump Room (El. 591 ft.)**	**4.2.3.2**								
AA17	17B	West Aux. Feed Pump Room - El. 591 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA17	17B	West Aux. Feed Pump Room - El. 591 ft. 0 in. - Unit 2		Detection:	None	-	-	-	-	-	
AA17	17B	West Aux. Feed Pump Room - El. 591 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA18		**Auxiliary Feedwater Pump Corridor (El. 591 ft.)**	**4.2.4.2**								
AA18	17C	Corridor to Aux. Feed Pump Rooms - El. 591 ft. 0 in. - Both Units		Suppression:	Wet Pipe	N	N	N	N	N	
AA18	17C	Corridor to Aux. Feed Pump Rooms - El. 591 ft. 0 in. - Both Units		Detection:	Ionization	N	N	N	Y	N	
AA18	17C	Corridor to Aux. Feed Pump Rooms - El. 591 ft. 0 in. - Both Units		Feature:	None	-	-	-	-	-	
AA19		**Unit 1 East Motor Driven Auxiliary Feedwater Pump Room (El. 591 ft.)**	**4.2.3.2**								

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA19	17D	East Aux. Feed Pump Room - El. 591 ft. 0 in. - Unit 1		Suppression:	None	-	-	-	-	-	
AA19	17D	East Aux. Feed Pump Room - El. 591 ft. 0 in. - Unit 1		Detection:	None	-	-	-	-	-	
AA19	17D	East Aux. Feed Pump Room - El. 591 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA20		**Unit 1 Turbine Driven Auxiliary Feedwater Pump Room (El. 591 ft.)**	**4.2.3.2**								
AA20	17E	Turbine Aux. Feed Pump Room - El. 591 ft. 0 in. - Unit 1		Suppression:	Wet Pipe	N	N	N	N	N	
AA20	17E	Turbine Aux. Feed Pump Room - El. 591 ft. 0 in. - Unit 1		Detection:	None	-	-	-	-	-	
AA20	17E	Turbine Aux. Feed Pump Room - El. 591 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA21		**Unit 2 Turbine Driven Auxiliary Feedwater Pump Room (El. 591 ft.)**	**4.2.3.2**								
AA21	17F	Turbine Driven Auxiliary Feed Pump Room - El. 591 ft. 0 in. - Unit 2		Suppression:	Wet Pipe	N	N	N	N	N	
AA21	17F	Turbine Driven Auxiliary Feed Pump Room - El. 591 ft. 0 in. - Unit 2		Detection:	None	-	-	-	-	-	
AA21	17F	Turbine Driven Auxiliary Feed Pump Room - El. 591 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA22		**Unit 2 East Motor Driven Auxiliary Feedwater Pump Room (El. 591 ft.)**	**4.2.3.2**								
AA22	17G	East Auxiliary Feed Pump Room - El. 591 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA22	17G	East Auxiliary Feed Pump Room - El. 591 ft. 0 in. - Unit 2		Detection:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA22	17G	East Auxiliary Feed Pump Room - El. 591 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA23		**Unit 2 CD Diesel Generator Room (El. 587 ft.)**	**4.2.4.2**								
AA23	18	2CD Diesel Generator Room - El. 587 ft. 0 in. - Unit 2		Suppression:	Automatic CO2	N	N	Y	Y	N	
AA23	18	2CD Diesel Generator Room - El. 587 ft. 0 in. - Unit 2		Detection:	Thermal	N	N	Y	Y	N	Actuates Suppression
AA23	18	2CD Diesel Generator Room - El. 587 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA24		**Unit 2 AB Diesel Generator Room (El. 587 ft.)**	**4.2.4.2**								
AA24	19	2AB Diesel Generator Room - El. 587 ft. 0 in. - Unit 2		Suppression:	Automatic CO2	Y	N	Y	Y	N	
AA24	19	2AB Diesel Generator Room - El. 587 ft. 0 in. - Unit 2		Detection:	Thermal	Y	N	Y	Y	N	Actuates Suppression
AA24	19	2AB Diesel Generator Room - El. 587 ft. 0 in. - Unit 2		Feature:	ERFBS	Y	N	N	Y	N	1-hour wrapped raceway enclosures
AA25		**Unit 2 Transformer Room (El. 591 ft.)**	**4.2.3.2**								
AA25	20	Transformer Room - El. 591 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA25	20	Transformer Room - El. 591 ft. 0 in. - Unit 2		Detection:	Ionization	N	N	Y	N	N	
AA25	20	Transformer Room - El. 591 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA26		**Unit 2 Diesel Generator Oil Pump Room (El. 587 ft.)**	**4.2.3.2**								
AA26	21	Diesel Oil Pump Room - El. 587 ft. 0 in. - Unit 2		Suppression:	Automatic CO2	N	N	N	N	N	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA26	21	Diesel Oil Pump Room - El. 587 ft. 0 in. - Unit 2		Detection:	Thermal	N	N	Y	N	N	Actuates Suppression
AA26	21	Diesel Oil Pump Room - El. 587 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA27		**Unit 2 Quadrant 2 Piping Tunnel (El. 591 ft.)**	**4.2.4.2**								
AA27	22	Quadrant 2 Piping Tunnel - El. 591 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA27	22	Quadrant 2 Piping Tunnel - El. 591 ft. 0 in. - Unit 2		Detection:	None	-	-	-	-	-	
AA27	22	Quadrant 2 Piping Tunnel - El. 591 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA29		**Unit 2 Quadrant 3M & 3S Cable Tunnel (El. 596 ft.)**	**4.2.4.2**								
AA29	23	Quadrant 3N Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 2		Suppression:	Manual CO2	N	N	Y	N	N	Cable tunnel (not in corridor between quadrants)
AA29	23	Quadrant 3N Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 2		Detection:	Infrared	N	N	Y	Y	N	
AA29	23	Quadrant 3N Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 2		Detection:	Ionization	N	N	Y	Y	N	
AA29	23	Quadrant 3N Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA29	24	Quadrant 3M Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 2		Suppression:	Manual CO2	N	N	Y	Y	N	
AA29	24	Quadrant 3M Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 2		Detection:	Infrared	N	N	Y	Y	N	
AA29	24	Quadrant 3M Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 2		Detection:	Ionization	N	N	Y	Y	N	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA29	24	Quadrant 3M Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA29	25	Quadrant 3S Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 2		Suppression:	Manual CO2	N	N	Y	N	N	
AA29	25	Quadrant 3S Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 2		Detection:	Infrared	N	N	Y	Y	N	
AA29	25	Quadrant 3S Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 2		Detection:	Ionization	N	N	Y	Y	N	
AA29	25	Quadrant 3S Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA29	117	RW, CS, PW Tank Area Pipe Tunnel - Unit 2 - El. 593 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA29	117	RW, CS, PW Tank Area Pipe Tunnel - Unit 2 - El. 593 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA29	117	RW, CS, PW Tank Area Pipe Tunnel - Unit 2 - El. 593 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA30		**Unit 2 Quadrant 4 Cable Tunnel (El. 596 ft.)**	**4.2.4.2**								
AA30	26	Quadrant 4 Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 2		Suppression:	Manual CO2	N	N	Y	N	N	Cable tunnel (not provided in two east cubicles)
AA30	26	Quadrant 4 Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 2		Detection:	Infrared	N	N	Y	Y	N	
AA30	26	Quadrant 4 Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 2		Detection:	Ionization	N	N	Y	Y	N	
AA30	26	Quadrant 4 Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA31		**Unit 2 Quadrant 1 Cable Tunnel (El. 596 ft.)**	**4.2.4.2**								

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA31	27	Quadrant 1 Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 2		Suppression:	Manual CO2	N	N	Y	Y	N	
AA31	27	Quadrant 1 Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 2		Detection:	Infrared	N	N	Y	Y	N	
AA31	27	Quadrant 1 Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 2		Detection:	Ionization	N	N	Y	Y	N	
AA31	27	Quadrant 1 Cable Tunnel - El. 596 ft. 3-1/2 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA32		**Unit 1 Essential Service Water Pump Area and Unit 1 and Unit 2 Basement Motor Control Center Room (El. 591 ft. and 575 ft.)**	**4.2.3.3(c)**								
AA32	29A	Essential Service Water Pump PP-1E - El. 591 ft. 0 in. - Unit 1		Suppression:	None	-	-	-	-	-	Licensing action for lack of suppression
AA32	29A	Essential Service Water Pump PP-1E - El. 591 ft. 0 in. - Unit 1		Detection:	Ionization	Y	Y	Y	N	N	
AA32	29A	Essential Service Water Pump PP-1E - El. 591 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA32	29B	Essential Service Water Pump PP-1W - El. 591 ft. 0 in. - Unit 1		Suppression:	None	-	-	-	-	-	Licensing action for lack of suppression
AA32	29B	Essential Service Water Pump PP-1W - El. 591 ft. 0 in. - Unit 1		Detection:	Ionization	Y	Y	Y	N	N	
AA32	29B	Essential Service Water Pump PP-1W - El. 591 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA32	29E	Motor Control Center For ESW Pumps - El. 591 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	Licensing action for lack of suppression
AA32	29E	Motor Control Center For ESW Pumps - El. 591 ft. 0 in. - Unit 2		Detection:	Ionization	Y	Y	Y	N	N	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA32	29E	Motor Control Center For ESW Pumps - El. 591 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA32	29G	Screen House Motor Control Room for ESW - El. 575 ft. 0 in. Unit 1 and Unit 2		Suppression:	None	-	-	-	-	-	Licensing action for lack of suppression
AA32	29G	Screen House Motor Control Room for ESW - El. 575 ft. 0 in. Unit 1 and Unit 2		Detection:	Ionization	Y	Y	Y	N	N	
AA32	29G	Screen House Motor Control Room for ESW - El. 575 ft. 0 in. Unit 1 and Unit 2		Feature:	ERFBS	Y	N	N	Y	N	1-hour wrapped raceway enclosures
AA33		**Unit 2 Essential Service Water Pump Area (El. 591 ft.)**	**4.2.4.2**								
AA33	29C	Essential Service Water Pump PP-2E - El. 591 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA33	29C	Essential Service Water Pump PP-2E - El. 591 ft. 0 in. - Unit 2		Detection:	Ionization	N	N	Y	Y	N	
AA33	29C	Essential Service Water Pump PP-2E - El. 591 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA33	29D	Essential Service Water Pump PP-2W - El. 591 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA33	29D	Essential Service Water Pump PP-2W - El. 591 ft. 0 in. - Unit 2		Detection:	Ionization	N	N	Y	Y	N	
AA33	29D	Essential Service Water Pump PP-2W - El. 591 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA33	29F	Motor Control Center for ESW Pumps - El. 591 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA33	29F	Motor Control Center for ESW Pumps - El. 591 ft. 0 in. - Unit 2		Detection:	Ionization	N	N	N	Y	N	
AA33	29F	Motor Control Center for ESW Pumps - El. 591 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA34		**Unit 1 East Main Steam Valve Enclosure, Main Steam Line Non-Essential Service Water Valve Areas & Contractor Access Control Area (EL. 612 ft.)**	**4.2.4.2**								
AA34	33	Main Steam Valve Enclosure, East - El. 612 ft. 0 in. - Unit 1		Suppression:	None	-	-	-	-	-	
AA34	33	Main Steam Valve Enclosure, East - El. 612 ft. 0 in. - Unit 1		Detection:	Thermal	N	N	Y	Y	N	
AA34	33	Main Steam Valve Enclosure, East - El. 612 ft. 0 in. - Unit 1		Detection:	Infrared	N	N	Y	Y	N	
AA34	33	Main Steam Valve Enclosure, East - El. 612 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA34	33A	Main Steam Line Area, East - El. 612 ft. 0 in. - Unit 1		Suppression:	None	-	-	-	-	-	
AA34	33A	Main Steam Line Area, East - El. 612 ft. 0 in. - Unit 1		Detection:	Ionization	N	N	Y	Y	N	
AA34	33A	Main Steam Line Area, East - El. 612 ft. 0 in. - Unit 1		Detection:	Infrared	N	N	Y	Y	N	
AA34	33A	Main Steam Line Area, East - El. 612 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA34	33B	Non Essential Service Water Valve Area, West - El. 612 ft. 0 in. - Unit 1		Suppression:	None	-	-	-	-	-	
AA34	33B	Non Essential Service Water Valve Area, West - El. 612 ft. 0 in. - Unit 1		Detection:	Ionization	N	N	Y	Y	N	
AA34	33B	Non Essential Service Water Valve Area, West - El. 612 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA34	105	Contractor Access Control Building - El. 612 ft. 0 in.		Suppression:	Wet Pipe	N	N	N	N	N	
AA34	105	Contractor Access Control Building - El. 612 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA34	105	Contractor Access Control Building - El. 612 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA35		**Unit 2 East Main Steam Valve Enclosure, Main Steam Line Non-Essential Service Water Valve Areas (EL. 612 ft.)**	**4.2.3.2**								
AA35	34	Main Steam Valve Enclosure, East - El. 612 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA35	34	Main Steam Valve Enclosure, East - El. 612 ft. 0 in. - Unit 2		Detection:	Infrared	N	N	Y	N	N	
AA35	34	Main Steam Valve Enclosure, East - El. 612 ft. 0 in. - Unit 2		Detection:	Thermal	N	N	Y	N	N	
AA35	34	Main Steam Valve Enclosure, East - El. 612 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA35	34A	Main Steam Line Area, East 612 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA35	34A	Main Steam Line Area, East 612 ft. 0 in. - Unit 2		Detection:	Infrared	N	N	Y	N	N	
AA35	34A	Main Steam Line Area, East 612 ft. 0 in. - Unit 2		Detection:	Ionization	N	N	Y	N	N	
AA35	34A	Main Steam Line Area, East 612 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA35	34B	Non Essential Service Water Valve Area, West - El. 612 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA35	34B	Non Essential Service Water Valve Area, West - El. 612 ft. 0 in. - Unit 2		Detection:	Ionization	N	N	Y	N	N	
AA35	34B	Non Essential Service Water Valve Area, West - El. 612 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA36/42		**Auxiliary Building (El. 609 ft.)**	**4.2.4.2**								
AA36/42	37	Valve Gallery - El. 617 ft. 0 in. - both Units		Suppression:	None	-	-	-	-	-	
AA36/42	37	Valve Gallery - El. 617 ft. 0 in. - both Units		Detection:	Ionization	N	N	Y	Y	N	
AA36/42	37	Valve Gallery - El. 617 ft. 0 in. - both Units		Feature:	None	-	-	-	-	-	
AA36/42	43	Access Control Area - El. 609 ft. 0 in. - Both Units		Suppression:	None	-	-	-	-	-	
AA36/42	43	Access Control Area - El. 609 ft. 0 in. - Both Units		Detection:	Ionization	N	N	Y	Y	N	
AA36/42	43	Access Control Area - El. 609 ft. 0 in. - Both Units		Feature:	None	-	-	-	-	-	
AA36/42	44A	Containment Spray Heat Exchanger Room #18E, Auxiliary Building - El. 609 ft. 0 in. - Unit 1		Suppression:	None	-	-	-	-	-	
AA36/42	44A	Containment Spray Heat Exchanger Room #18E, Auxiliary Building - El. 609 ft. 0 in. - Unit 1		Detection:	None	-	-	-	-	-	
AA36/42	44A	Containment Spray Heat Exchanger Room #18E, Auxiliary Building - El. 609 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA36/42	44B	Containment Spray Heat Exchanger Room #18W, Auxiliary Building - El. 609 ft. 0 in. - Unit 1		Suppression:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA36/42	44B	Containment Spray Heat Exchanger Room #18W, Auxiliary Building - El. 609 ft. 0 in. - Unit 1		Detection:	None	-	-	-	-	-	
AA36/42	44B	Containment Spray Heat Exchanger Room #18W, Auxiliary Building - El. 609 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA36/42	44C	Residual Heat Removal Heat Exchanger Room #17E, Auxiliary Building - El. 609 ft. 0 in. - Unit 1		Suppression:	None	-	-	-	-	-	
AA36/42	44C	Residual Heat Removal Heat Exchanger Room #17E, Auxiliary Building - El. 609 ft. 0 in. - Unit 1		Detection:	None	-	-	-	-	-	
AA36/42	44C	Residual Heat Removal Heat Exchanger Room #17E, Auxiliary Building - El. 609 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA36/42	44D	Residual Heat Removal Heat Exchanger Room #17W, Auxiliary Building - El. 609 ft. 0 in. - Unit 1		Suppression:	None	-	-	-	-	-	
AA36/42	44D	Residual Heat Removal Heat Exchanger Room #17W, Auxiliary Building - El. 609 ft. 0 in. - Unit 1		Detection:	None	-	-	-	-	-	
AA36/42	44D	Residual Heat Removal Heat Exchanger Room #17W, Auxiliary Building - El. 609 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA36/42	44E	Containment Spray Heat Exchanger Room #18E, Auxiliary Building - El. 609 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA36/42	44E	Containment Spray Heat Exchanger Room #18E, Auxiliary Building - El. 609 ft. 0 in. - Unit 2		Detection:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA36/42	44E	Containment Spray Heat Exchanger Room #18E, Auxiliary Building - El. 609 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA36/42	44F	Containment Spray Heat Exchanger Room #18W, Auxiliary Building - El. 609 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA36/42	44F	Containment Spray Heat Exchanger Room #18W, Auxiliary Building - El. 609 ft. 0 in. - Unit 2		Detection:	None	-	-	-	-	-	
AA36/42	44F	Containment Spray Heat Exchanger Room #18W, Auxiliary Building - El. 609 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA36/42	44G	Residual Heat Removal Heat Exchanger Room #17E, Auxiliary Building - El. 609 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA36/42	44G	Residual Heat Removal Heat Exchanger Room #17E, Auxiliary Building - El. 609 ft. 0 in. - Unit 2		Detection:	None	-	-	-	-	-	
AA36/42	44G	Residual Heat Removal Heat Exchanger Room #17E, Auxiliary Building - El. 609 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA36/42	44H	Residual Heat Removal Heat Exchanger Room #17W, Auxiliary Building - El. 609 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA36/42	44H	Residual Heat Removal Heat Exchanger Room #17W, Auxiliary Building - El. 609 ft. 0 in. - Unit 2		Detection:	None	-	-	-	-	-	
AA36/42	44H	Residual Heat Removal Heat Exchanger Room #17W, Auxiliary Building - El. 609 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA36/42	44N	Auxiliary Building North - El. 609 ft. 0 in. - Both Units		Suppression:	Water Curtain	Y	N	Y	Y	N	Provides a fire area boundary around open stairwell
AA36/42	44N	Auxiliary Building North - El. 609 ft. 0 in. - Both Units		Suppression:	Pre-Action	Y	N	Y	Y	N	
AA36/42	44N	Auxiliary Building North - El. 609 ft. 0 in. - Both Units		Detection:	Ionization	Y	N	Y	Y	N	
AA36/42	44N	Auxiliary Building North - El. 609 ft. 0 in. - Both Units		Feature:	None	-	-	-	-	-	
AA36/42	44S	Auxiliary Building South - El. 609 ft. 0 in. - Both Units		Suppression:	Pre-Action	Y	N	Y	Y	N	
AA36/42	44S	Auxiliary Building South - El. 609 ft. 0 in. - Both Units		Suppression:	Water Curtain	Y	N	Y	Y	N	Provides a fire area boundary around open stairwell
AA36/42	44S	Auxiliary Building South - El. 609 ft. 0 in. - Both Units		Detection:	Ionization	Y	N	Y	Y	N	
AA36/42	44S	Auxiliary Building South - El. 609 ft. 0 in. - Both Units		Feature:	Intra-Fire Area Barrier	Y	N	N	Y	N	Separates CCW pumps
AA37		**Unit 1 Quadrant 2 Cable Tunnel (El. 612 ft.)**	**4.2.4.2**								
AA37	38	Quadrant 2 Penetration Cable Tunnel - El. 612 ft. 0 in. - Unit 1		Suppression:	Manual CO2	N	N	Y	N	N	
AA37	38	Quadrant 2 Penetration Cable Tunnel - El. 612 ft. 0 in. - Unit 1		Detection:	Ionization	N	N	Y	Y	N	
AA37	38	Quadrant 2 Penetration Cable Tunnel - El. 612 ft. 0 in. - Unit 1		Detection:	Infrared	N	N	Y	Y	N	
AA37	38	Quadrant 2 Penetration Cable Tunnel - El. 612 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA38		**Unit 2 Quadrant 2 Cable Tunnel (El. 612 ft.)**	**4.2.4.2**								

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA38	39	Quadrant 2 Penetration Cable Tunnel - El. 612 ft. 0 in. - Unit 2		Suppression:	Manual CO2	N	N	Y	N	N	
AA38	39	Quadrant 2 Penetration Cable Tunnel - El. 612 ft. 0 in. - Unit 2		Detection:	Ionization	N	N	Y	Y	N	
AA38	39	Quadrant 2 Penetration Cable Tunnel - El. 612 ft. 0 in. - Unit 2		Detection:	Infrared	N	N	Y	Y	N	
AA38	39	Quadrant 2 Penetration Cable Tunnel - El. 612 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA39A		**Unit 1 AB Switchgear Room (El. 609 ft. 6 in.)**	**4.2.4.2**								
AA39A	40A	4KV AB Switchgear Room - El. 609 ft. 6 in. - Unit 1		Suppression:	Automatic CO2	Y	N	Y	N	N	
AA39A	40A	4KV AB Switchgear Room - El. 609 ft. 6 in. - Unit 1		Detection:	Ionization	Y	N	Y	Y	N	
AA39A	40A	4KV AB Switchgear Room - El. 609 ft. 6 in. - Unit 1		Detection:	Infrared	Y	N	Y	Y	N	Actuates Suppression
AA39A	40A	4KV AB Switchgear Room - El. 609 ft. 6 in. - Unit 1		Feature:	ERFBS	Y	N	N	Y	N	1-hour wrapped raceway enclosure
AA39B		**Unit 1 CD Switchgear Room (El. 609 ft. 6 in.)**	**4.2.3.2**								
AA39B	40B	4KV CD Switchgear Room - El. 609 ft. 6 in. - Unit 1		Suppression:	Automatic CO2	N	N	Y	N	N	
AA39B	40B	4KV CD Switchgear Room - El. 609 ft. 6 in. - Unit 1		Detection:	Infrared	N	N	Y	N	N	Actuates Suppression
AA39B	40B	4KV CD Switchgear Room - El. 609 ft. 6 in. - Unit 1		Detection:	Ionization	N	N	Y	N	N	
AA39B	40B	4KV CD Switchgear Room - El. 609 ft. 6 in. - Unit 1		Feature:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA40		**Unit 1 Engineered Safeguards Systems and Motor Control Center Room (El. 609 ft. 6 in.)**	**4.2.4.2**								
AA40	41	Eng Safety System & MCC Room - El. 609 ft. 6 in. (& under floor) - Unit 1		Suppression:	Automatic CO2	N	N	Y	Y	N	Implementation item
AA40	41	Eng Safety System & MCC Room - El. 609 ft. 6 in. (& under floor) - Unit 1		Detection:	Infrared	N	N	Y	Y	N	Actuates Suppression
AA40	41	Eng Safety System & MCC Room - El. 609 ft. 6 in. (& under floor) - Unit 1		Detection:	Ionization	N	N	Y	Y	N	
AA40	41	Eng Safety System & MCC Room - El. 609 ft. 6 in. (& under floor) - Unit 1		Feature:	None	-	-	-	-	-	
AA41		**Unit 1 Emergency Power Systems Area (El. 609 ft. 6 in.)**	**4.2.4.2**								
AA41	42A	E.P.S. Transformer Room - El. 609 ft. 6 in. - Unit 1		Suppression:	Manual CO2	N	N	Y	N	N	
AA41	42A	E.P.S. Transformer Room - El. 609 ft. 6 in. - Unit 1		Detection:	Ionization	N	N	Y	Y	N	
AA41	42A	E.P.S. Transformer Room - El. 609 ft. 6 in. - Unit 1		Detection:	Infrared	N	N	Y	Y	N	
AA41	42A	E.P.S. Transformer Room - El. 609 ft. 6 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA41	42B	E.P.S. Control Rod Drive Room - El. 609 ft. 6 in. - Unit 1		Suppression:	Manual CO2	N	N	Y	N	N	
AA41	42B	E.P.S. Control Rod Drive Room - El. 609 ft. 6 in. - Unit 1		Detection:	Ionization	N	N	Y	Y	N	
AA41	42B	E.P.S. Control Rod Drive Room - El. 609 ft. 6 in. - Unit 1		Detection:	Infrared	N	N	Y	Y	N	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA41	42B	E.P.S. Control Rod Drive Room - El. 609 ft. 6 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA41	42C	E.P.S. Motor Control Room - El. 609 ft. 6 in. - Unit 1		Suppression:	Manual CO2	N	N	Y	N	N	
AA41	42C	E.P.S. Motor Control Room - El. 609 ft. 6 in. - Unit 1		Detection:	Infrared	N	N	Y	Y	N	
AA41	42C	E.P.S. Motor Control Room - El. 609 ft. 6 in. - Unit 1		Detection:	Ionization	N	N	Y	Y	N	
AA41	42C	E.P.S. Motor Control Room - El. 609 ft. 6 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA41	42D	E.P.S. (AB) Battery Room - El. 609 ft. 6 in. - Unit 1		Suppression:	None	-	-	-	-	-	
AA41	42D	E.P.S. (AB) Battery Room - El. 609 ft. 6 in. - Unit 1		Detection:	Ionization	N	N	Y	Y	N	
AA41	42D	E.P.S. (AB) Battery Room - El. 609 ft. 6 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA43		**Unit 2 Engineered Safeguards Systems and Motor Control Center Room (El. 609 ft. 6 in.)**	**4.2.4.2**								
AA43	45	Eng Safety System. & MCC Room - El. 609 ft. 6 in. (& Underfloor) - Unit 2		Suppression:	Automatic CO2	N	N	Y	Y	N	Implementation item
AA43	45	Eng Safety System. & MCC Room - El. 609 ft. 6 in. (& Underfloor) - Unit 2		Detection:	Ionization	N	N	Y	Y	N	
AA43	45	Eng Safety System. & MCC Room - El. 609 ft. 6 in. (& Underfloor) - Unit 2		Detection:	Infrared	N	N	Y	Y	N	Actuates Suppression
AA43	45	Eng Safety System. & MCC Room - El. 609 ft. 6 in. (& Underfloor) - Unit 2		Feature:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA44		**Unit 2 Emergency Power Systems Area (El. 609 ft. 6 in.)**	**4.2.4.2**								
AA44	46A	EPS Transformer Room - El. 609 ft. 6 in. - Unit 2		Suppression:	Manual CO2	N	N	Y	N	N	
AA44	46A	EPS Transformer Room - El. 609 ft. 6 in. - Unit 2		Detection:	Infrared	N	N	Y	Y	N	
AA44	46A	EPS Transformer Room - El. 609 ft. 6 in. - Unit 2		Detection:	Ionization	N	N	Y	Y	N	
AA44	46A	EPS Transformer Room - El. 609 ft. 6 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA44	46B	EPS Control Rod Drive Room - El. 609 ft. 6 in. - Unit 2		Suppression:	Manual CO2	N	N	Y	N	N	
AA44	46B	EPS Control Rod Drive Room - El. 609 ft. 6 in. - Unit 2		Detection:	Infrared	N	N	Y	Y	N	
AA44	46B	EPS Control Rod Drive Room - El. 609 ft. 6 in. - Unit 2		Detection:	Ionization	N	N	Y	Y	N	
AA44	46B	EPS Control Rod Drive Room - El. 609 ft. 6 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA44	46C	EPS Motor Control Room - El. 609 ft. 6 in. - Unit 2		Suppression:	Manual CO2	N	N	Y	N	N	
AA44	46C	EPS Motor Control Room - El. 609 ft. 6 in. - Unit 2		Detection:	Ionization	N	N	Y	Y	N	
AA44	46C	EPS Motor Control Room - El. 609 ft. 6 in. - Unit 2		Detection:	Infrared	N	N	Y	Y	N	
AA44	46C	EPS Motor Control Room - El. 609 ft. 6 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA44	46D	EPS (AB) Battery Room - El. 609 ft. 6 in. - Unit 2		Suppression:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA44	46D	EPS (AB) Battery Room - El. 609 ft. 6 in. - Unit 2		Detection:	Ionization	N	N	Y	Y	N	
AA44	46D	EPS (AB) Battery Room - El. 609 ft. 6 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA45A		**Unit 2 AB Switchgear Room (El. 609 ft. 6 in.)**	**4.2.4.2**								
AA45A	47A	4KV AB Switchgear Room - El. 609 ft. 6 in. - Unit 2		Suppression:	Automatic CO2	Y	N	Y	N	N	
AA45A	47A	4KV AB Switchgear Room - El. 609 ft. 6 in. - Unit 2		Detection:	Ionization	Y	N	Y	Y	N	
AA45A	47A	4KV AB Switchgear Room - El. 609 ft. 6 in. - Unit 2		Detection:	Infrared	Y	N	Y	Y	N	Actuates Suppression
AA45A	47A	4KV AB Switchgear Room - El. 609 ft. 6 in. - Unit 2		Feature:	ERFBS	Y	N	N	Y	N	1-hour wrapped raceway enclosure
AA45B		**Unit 2 CD Switchgear Room (El. 609 ft. 6 in.)**	**4.2.3.2**								
AA45B	47B	4KV CD Switchgear Room - El. 609 ft. 6 in. - Unit 2		Suppression:	Automatic CO2	N	N	Y	N	N	
AA45B	47B	4KV CD Switchgear Room - El. 609 ft. 6 in. - Unit 2		Detection:	Infrared	N	N	Y	N	N	Actuates Suppression
AA45B	47B	4KV CD Switchgear Room - El. 609 ft. 6 in. - Unit 2		Detection:	Ionization	N	N	Y	N	N	
AA45B	47B	4KV CD Switchgear Room - El. 609 ft. 6 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA46		**Unit 1 Control Room (El. 633 ft.)**	**4.2.4.2**								
AA46	53	Unit 1 Control Room - El. 633 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA46	53	Unit 1 Control Room - El. 633 ft. 0 in.		Detection:	Ionization	N	N	Y	Y	N	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA46	53	Unit 1 Control Room - El. 633 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA47		**Unit 2 Control Room (El. 633 ft.)**	**4.2.4.2**								
AA47	54	Unit 2 Control Room - El. 633 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA47	54	Unit 2 Control Room - El. 633 ft. 0 in.		Detection:	Ionization	N	N	Y	Y	N	
AA47	54	Unit 2 Control Room - El. 633 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA48		**Unit 1 Switchgear Rooms Cable Vault and Auxiliary Cable Vault (El. 625 ft. 10 in. and 620 ft. 6 in.)**	**4.2.4.2**								
AA48	55	Switchgear Room Cable Vault - El. 625 ft. 10 in. - Unit 1		Suppression:	Automatic CO2	N	N	Y	Y	N	Cable spreading area, battery charging room and corridors
AA48	55	Switchgear Room Cable Vault - El. 625 ft. 10 in. - Unit 1		Detection:	Ionization	N	N	Y	Y	N	Actuates Suppression
AA48	55	Switchgear Room Cable Vault - El. 625 ft. 10 in. - Unit 1		Detection:	Infrared	N	N	Y	Y	N	Actuates Suppression
AA48	55	Switchgear Room Cable Vault - El. 625 ft. 10 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA48	56	Auxiliary Cable Vault - El. 620 ft. 6 in. - Unit 1		Suppression:	Automatic CO2	N	N	Y	Y	N	
AA48	56	Auxiliary Cable Vault - El. 620 ft. 6 in. - Unit 1		Detection:	Ionization	N	N	Y	Y	N	Actuates Suppression
AA48	56	Auxiliary Cable Vault - El. 620 ft. 6 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA50		**Unit 1 Control Room Cable Vault and Hot Shutdown Panel Area (El. 624 ft. and 633 ft.)**	**4.2.4.2**								
AA50	57	Control Room Cable Vault - El. 624 ft. 0 in. - Unit 1		Suppression:	Manual CO2	N	N	Y	N	N	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA50	57	Control Room Cable Vault - El. 624 ft. 0 in. - Unit 1		Suppression:	Halon	N	N	Y	Y	N	
AA50	57	Control Room Cable Vault - El. 624 ft. 0 in. - Unit 1		Detection:	Ionization	N	N	Y	Y	N	Actuates Suppression
AA50	57	Control Room Cable Vault - El. 624 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA50	144	Unit 1 Hot Shutdown Panel Enclosure - El. 633 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA50	144	Unit 1 Hot Shutdown Panel Enclosure - El. 633 ft. 0 in.		Detection:	Ionization	N	N	Y	Y	N	
AA50	144	Unit 1 Hot Shutdown Panel Enclosure - El. 633 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA51		**Unit 2 Control Room Cable Vault and Hot Shutdown Panel Area (El 624 ft. and 633 ft.)**	**4.2.4.2**								
AA51	58	Control Room Cable Vault - El. 624 ft. 0 in. - Unit 2		Suppression:	Halon	N	N	Y	Y	N	
AA51	58	Control Room Cable Vault - El. 624 ft. 0 in. - Unit 2		Suppression:	Wet Pipe	N	N	N	N	N	
AA51	58	Control Room Cable Vault - El. 624 ft. 0 in. - Unit 2		Suppression:	Manual CO2	N	N	Y	N	N	
AA51	58	Control Room Cable Vault - El. 624 ft. 0 in. - Unit 2		Detection:	Ionization	N	N	Y	Y	N	Actuates Suppression
AA51	58	Control Room Cable Vault - El. 624 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA51	145	Unit 2 Hot Shutdown Panel Enclosure - El. 633 ft. 0 in.		Suppression:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA51	145	Unit 2 Hot Shutdown Panel Enclosure - El. 633 ft. 0 in.		Detection:	Ionization	N	N	Y	Y	N	
AA51	145	Unit 2 Hot Shutdown Panel Enclosure - El. 633 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA52		**Unit 2 Switchgear Room Cable Vault and Auxiliary Cable Vault (El. 625 ft. 10 in. and 620 ft. 6 in.)**	**4.2.4.2**								
AA52	59	Auxiliary Cable Vault - El. 620 ft. 6 in. - Unit 2		Suppression:	Automatic CO2	N	N	Y	Y	N	
AA52	59	Auxiliary Cable Vault - El. 620 ft. 6 in. - Unit 2		Detection:	Ionization	N	N	Y	Y	N	Actuates Suppression
AA52	59	Auxiliary Cable Vault - El. 620 ft. 6 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA52	60	Switchgear Room Cable Vault - El. 625 ft. 10 in. - Unit 2		Suppression:	Automatic CO2	N	N	Y	Y	N	Cable spreading area, battery charging room and corridors
AA52	60	Switchgear Room Cable Vault - El. 625 ft. 10 in. - Unit 2		Detection:	Ionization	N	N	Y	Y	N	Actuates Suppression
AA52	60	Switchgear Room Cable Vault - El. 625 ft. 10 in. - Unit 2		Detection:	Infrared	N	N	Y	Y	N	Actuates Suppression
AA52	60	Switchgear Room Cable Vault - El. 625 ft. 10 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA54		**Unit 1 Charging Pumps Area (El. 587 ft.)**	**4.2.4.2**								
AA54	62A	Reciprocating Charging Pump - El. 587 ft. 0 in. - Unit 1		Suppression:	Pre-Action	N	N	Y	Y	N	
AA54	62A	Reciprocating Charging Pump - El. 587 ft. 0 in. - Unit 1		Detection:	Ionization	N	N	Y	Y	N	
AA54	62A	Reciprocating Charging Pump - El. 587 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		S	L	E	R	D	Required Fire Protection Feature and System Notes
AA54	62B	Centrifugal Charging Pump - El. 587 ft. 0 in. - Unit 1		Suppression:	Pre-Action	N	N	Y	Y	N	
AA54	62B	Centrifugal Charging Pump - El. 587 ft. 0 in. - Unit 1		Detection:	Ionization	N	N	Y	Y	N	
AA54	62B	Centrifugal Charging Pump - El. 587 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA54	62C	Centrifugal Charging Pump - El. 587 ft. 0 in. - Unit 1		Suppression:	Pre-Action	N	N	Y	Y	N	
AA54	62C	Centrifugal Charging Pump - El. 587 ft. 0 in. - Unit 1		Detection:	Ionization	N	N	Y	Y	N	
AA54	62C	Centrifugal Charging Pump - El. 587 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA55		**Unit 2 Charging Pumps Area (El. 587 ft.)**	**4.2.4.2**								
AA55	63A	Reciprocating Charging Pump - El. 587 ft. 0 in. - Unit 2		Suppression:	Pre-Action	N	N	Y	Y	N	
AA55	63A	Reciprocating Charging Pump - El. 587 ft. 0 in. - Unit 2		Detection:	Ionization	N	N	Y	Y	N	
AA55	63A	Reciprocating Charging Pump - El. 587 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA55	63B	Centrifugal Charging Pump - El. 587 ft. 0 in. - Unit 2		Suppression:	Pre-Action	N	N	Y	Y	N	
AA55	63B	Centrifugal Charging Pump - El. 587 ft. 0 in. - Unit 2		Detection:	Ionization	N	N	Y	Y	N	
AA55	63B	Centrifugal Charging Pump - El. 587 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA55	63C	Centrifugal Charging Pump - El. 587 ft. 0 in. - Unit 2		Suppression:	Pre-Action	N	N	Y	Y	N	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		S	L	E	R	D	Required Fire Protection Feature and System Notes
AA55	63C	Centrifugal Charging Pump - El. 587 ft. 0 in. - Unit 2		Detection:	Ionization	N	N	Y	Y	N	
AA55	63C	Centrifugal Charging Pump - El. 587 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA56		**Unit 1 Containment**	**4.2.4.2**								
AA56	66	Containment Piping Annulus - El. 598 ft. 9-3/8 in. - Unit 1		Suppression:	None	-	-	-	-	-	
AA56	66	Containment Piping Annulus - El. 598 ft. 9-3/8 in. - Unit 1		Detection:	Thermal	N	N	Y	Y	N	
AA56	66	Containment Piping Annulus - El. 598 ft. 9-3/8 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA56	67	Containment Lower Volume - El. 598 ft. 9-3/8 in. - Unit 1		Suppression:	None	-	-	-	-	-	
AA56	67	Containment Lower Volume - El. 598 ft. 9-3/8 in. - Unit 1		Detection:	Thermal	N	N	Y	Y	N	
AA56	67	Containment Lower Volume - El. 598 ft. 9-3/8 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA56	68	Containment Upper Volume - El. 650 ft. 0 in. - Unit 1		Suppression:	None	-	-	-	-	-	
AA56	68	Containment Upper Volume - El. 650 ft. 0 in. - Unit 1		Detection:	Thermal	N	N	Y	Y	N	
AA56	68	Containment Upper Volume - El. 650 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA56	101	Containment Accumulator Enc. West - Unit 1 - El. 612 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA56	101	Containment Accumulator Enc. West - Unit 1 - El. 612 ft. 0 in.		Detection:	Thermal	N	N	Y	Y	N	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA56	101	Containment Accumulator Enc. West - Unit 1 - El. 612 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA56	103	Reactor Head Enclosure - Unit 1 - El. 567 ft. 2 in.		Suppression:	None	-	-	-	-	-	
AA56	103	Reactor Head Enclosure - Unit 1 - El. 567 ft. 2 in.		Detection:	Thermal	N	N	Y	Y	N	
AA56	103	Reactor Head Enclosure - Unit 1 - El. 567 ft. 2 in.		Feature:	None	-	-	-	-	-	
AA56	118	Containment Regen Heat Exchanger Room - Unit 1 - El. 612 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA56	118	Containment Regen Heat Exchanger Room - Unit 1 - El. 612 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA56	118	Containment Regen Heat Exchanger Room - Unit 1 - El. 612 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA56	120	Containment Accumulator Enclosure East - Unit 1 - El. 612 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA56	120	Containment Accumulator Enclosure East - Unit 1 - El. 612 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA56	120	Containment Accumulator Enclosure East - Unit 1 - El. 612 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA56	122	Containment Instrumentation Room - Unit 1 - El. 612 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA56	122	Containment Instrumentation Room - Unit 1 - El. 612 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA56	122	Containment Instrumentation Room - Unit 1 - El. 612 ft. 0 in.		Feature:	Radiant Energy Shield	Y	N	N	Y	N	Protects instrumentation
AA56	132	Unit 1 Ice Condenser - El. 640 ft. 0 in.		Suppression:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA56	132	Unit 1 Ice Condenser - El. 640 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA56	132	Unit 1 Ice Condenser - El. 640 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA56	134	Unit 1 Reactor Vessel Pit - El. 567 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA56	134	Unit 1 Reactor Vessel Pit - El. 567 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA56	134	Unit 1 Reactor Vessel Pit - El. 567 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA57A		**Unit 1 Control Room HVAC Equipment and Computer Areas (El. 650 ft.)**	**4.2.4.2**								
AA57A	70	Control Room HVAC Equipment - El. 650 ft. 0 in. - Unit 1		Suppression:	None	-	-	-	-	-	
AA57A	70	Control Room HVAC Equipment - El. 650 ft. 0 in. - Unit 1		Detection:	Ionization	N	N	Y	Y	N	
AA57A	70	Control Room HVAC Equipment - El. 650 ft. 0 in. - Unit 1		Feature:	None	-	-	-	-	-	
AA57A	71	Unit 1 Computer Room - El. 650 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA57A	71	Unit 1 Computer Room - El. 650 ft. 0 in.		Detection:	Ionization	N	N	Y	Y	N	
AA57A	71	Unit 1 Computer Room - El. 650 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA57B		**Unit 2 Control Room HVAC Equipment and Computer Areas (El. 650 ft.)**	**4.2.4.2**								
AA57B	72	Unit 2 Computer Room - El. 650 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA57B	72	Unit 2 Computer Room - El. 650 ft. 0 in.		Detection:	Ionization	N	N	Y	Y	N	
AA57B	72	Unit 2 Computer Room - El. 650 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA57B	73	Control Room HVAC Equipment - El. 650 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA57B	73	Control Room HVAC Equipment - El. 650 ft. 0 in. - Unit 2		Detection:	Ionization	N	N	Y	Y	N	
AA57B	73	Control Room HVAC Equipment - El. 650 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA58		**Unit 2 Containment**	**4.2.4.2**								
AA58	74	Containment Piping Annulus - El. 598 ft. 9-3/8 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA58	74	Containment Piping Annulus - El. 598 ft. 9-3/8 in. - Unit 2		Detection:	Thermal	N	N	Y	Y	N	
AA58	74	Containment Piping Annulus - El. 598 ft. 9-3/8 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA58	75	Containment Lower Volume - El. 598 ft. 9-3/8 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA58	75	Containment Lower Volume - El. 598 ft. 9-3/8 in. - Unit 2		Detection:	Thermal	N	N	Y	Y	N	
AA58	75	Containment Lower Volume - El. 598 ft. 9-3/8 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA58	76	Containment Upper Volume - El. 650 ft. 0 in. - Unit 2		Suppression:	None	-	-	-	-	-	
AA58	76	Containment Upper Volume - El. 650 ft. 0 in. - Unit 2		Detection:	Thermal	N	N	Y	Y	N	
AA58	76	Containment Upper Volume - El. 650 ft. 0 in. - Unit 2		Feature:	None	-	-	-	-	-	
AA58	102	Containment Accumulator Enc. West - Unit 2 - El. 612 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA58	102	Containment Accumulator Enc. West - Unit 2 - El. 612 ft. 0 in.		Detection:	Thermal	N	N	Y	Y	N	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA58	102	Containment Accumulator Enc. West - Unit 2 - El. 612 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA58	104	Reactor Head Enclosure - Unit 2 - El. 567 ft. 2 in.		Suppression:	None	-	-	-	-	-	
AA58	104	Reactor Head Enclosure - Unit 2 - El. 567 ft. 2 in.		Detection:	Thermal	N	N	Y	Y	N	
AA58	104	Reactor Head Enclosure - Unit 2 - El. 567 ft. 2 in.		Feature:	None	-	-	-	-	-	
AA58	119	Containment Regen Heat Exchanger Room - Unit 2 - El. 612 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA58	119	Containment Regen Heat Exchanger Room - Unit 2 - El. 612 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA58	119	Containment Regen Heat Exchanger Room - Unit 2 - El. 612 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA58	121	Containment Accumulator Enclosure East - Unit 2 - El. 612 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA58	121	Containment Accumulator Enclosure East - Unit 2 - El. 612 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA58	121	Containment Accumulator Enclosure East - Unit 2 - El. 612 ft. 0 in.		Feature:	None	-	-	-	-	-	
AA58	123	Containment Instrumentation Room - Unit 2 - El. 612 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA58	123	Containment Instrumentation Room - Unit 2 - El. 612 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA58	123	Containment Instrumentation Room - Unit 2 - El. 612 ft. 0 in.		Feature:	Radiant Energy Shield	Y	N	N	Y	N	Protects instrumentation
AA58	133	Unit 2 Ice Condenser - El. 640 ft. 6 in.		Suppression:	None	-	-	-	-	-	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
AA58	133	Unit 2 Ice Condenser - El. 640 ft. 6 in.		Detection:	None	-	-	-	-	-	
AA58	133	Unit 2 Ice Condenser - El. 640 ft. 6 in.		Feature:	None	-	-	-	-	-	
AA58	135	Unit 2 Reactor Vessel Pit - El. 567 ft. 0 in.		Suppression:	None	-	-	-	-	-	
AA58	135	Unit 2 Reactor Vessel Pit - El. 567 ft. 0 in.		Detection:	None	-	-	-	-	-	
AA58	135	Unit 2 Reactor Vessel Pit - El. 567 ft. 0 in.		Feature:	None	-	-	-	-	-	
YD		**Yard**	**4.2.3.2**								
YD	131	Service and Office Building - El. 595 ft. 0 in.		Suppression:	Wet Pipe	N	N	N	N	N	
YD	131	Service and Office Building - El. 595 ft. 0 in.		Detection:	None	-	-	-	-	-	
YD	131	Service and Office Building - El. 595 ft. 0 in.		Feature:	None	-	-	-	-	-	
YD	143	Water Intake and Discharge System - El. 546 ft. 0 in. - Both Units		Suppression:	None	-	-	-	-	-	
YD	143	Water Intake and Discharge System - El. 546 ft. 0 in. - Both Units		Detection:	None	-	-	-	-	-	
YD	143	Water Intake and Discharge System - El. 546 ft. 0 in. - Both Units		Feature:	None	-	-	-	-	-	
YD	146	Auxiliary Building Loading Platform - El. 609 ft. 0 in.		Suppression:	Pre-Action	N	N	N	N	N	
YD	146	Auxiliary Building Loading Platform - El. 609 ft. 0 in.		Detection:	None	-	-	-	-	-	
YD	146	Auxiliary Building Loading Platform - El. 609 ft. 0 in.		Feature:	None	-	-	-	-	-	
YD	147	Containment Access Building - El. 609 ft. 0 in.		Suppression:	Wet Pipe	N	N	N	N	N	

Table 4-3 Summary of NFPA 805 Compliance Basis and Required Fire Protection Systems and Features

Fire Area	Fire Zone	Description	NFPA 805 Regulatory Basis	Type of Feature or System		Required for? S	L	E	R	D	Required Fire Protection Feature and System Notes
YD	147	Containment Access Building - El. 609 ft. 0 in.		Detection:	None	-	-	-	-	-	
YD	147	Containment Access Building - El. 609 ft. 0 in.		Feature:	None	-	-	-	-	-	
YD	Yard	Yard Inside Protected Area Fence		Suppression:	Pre-Action	N	N	Y	N	N	Pump cubicles in the fire pump house
YD	Yard	Yard Inside Protected Area Fence		Suppression:	Deluge	N	N	Y	N	N	Transformers
YD	Yard	Yard Inside Protected Area Fence		Suppression:	Automatic CO2	N	N	N	N	N	Alternate plant heating boilers
YD	Yard	Yard Inside Protected Area Fence		Detection:	Thermal	N	N	Y	N	N	Actuates Suppression
YD	Yard	Yard Inside Protected Area Fence		Feature:	None	-	-	-	-	-	

Legend:

Table Field: "Required?"
S - Required for Chapter 4 Separation Criteria L - Required for NRC Approved Licensing Action E - Required for Existing Engineering Equivalency Evaluation R - Required for Risk Significance D - Required to maintain adequate balance of Defense-in-Depth in a Change Evaluation or Fire Risk Evaluation

5.0 REGULATORY EVALUATION

5.1 Introduction – 10 CFR 50.48

On July 16, 2004 the NRC amended 10 CFR 50.48, Fire Protection, to add a new subsection, 10 CFR 50.48(c), which establishes alternative fire protection requirements. 10 CFR 50.48 endorses, with exceptions, NFPA 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants – 2001 Edition" (NFPA 805), as a voluntary alternative for demonstrating compliance with 10 CFR 50.48 Section (b) and Appendix R.

The voluntary adoption of 10 CFR 50.48(c) by CNP does not eliminate the need to comply with 10 CFR 50.48(a) and 10 CFR 50, Appendix A, GDC 3. A comparison of CNP PSDC 3 to 10 CFR 50, Appendix A, GDC 3 is provided in Table 5-2. The NRC addressed the overall adequacy of the regulations during the promulgation of 10 CFR 50.48(c), as documented in 69 FR 33536 dated June 16, 2004, ML041340086.

> *"NFPA 805 does not supersede the requirements of GDC 3, 10 CFR 50.48(a), or 10 CFR 50.48(f). Those regulatory requirements continue to apply to licensees that adopt NFPA 805. However, under NFPA 805, the means by which GDC 3 or 10 CFR 50.48(a) requirements may be met is different than under 10 CFR 50.48(b). Specifically, whereas GDC 3 refers to SSCs important to safety, NFPA 805 identifies fire protection systems and features required to meet the Chapter 1 performance criteria through the methodology in Chapter 4 of NFPA 805. Also, under NFPA 805, the 10 CFR 50.48(a)(2)(iii) requirement to limit fire damage to SSCs important to safety so that the capability to safely shut down the plant is ensured is satisfied by meeting the performance criteria in Section 1.5.1 of NFPA 805. The Section 1.5.1 criteria include provisions for ensuring that reactivity control, inventory and pressure control, decay heat removal, vital auxiliaries, and process monitoring are achieved and maintained.*
>
> *This methodology specifies a process to identify the fire protection systems and features required to achieve the nuclear safety performance criteria in Section 1.5 of NFPA 805. Once a determination has been made that a fire protection system or feature is required to achieve the performance criteria of Section 1.5, its design must meet any applicable requirements of NFPA 805, Chapter 3. Having identified the required fire protection systems and features, the licensee selects either a deterministic or performance-based approach to demonstrate that the performance criteria are satisfied. This process satisfies the GDC 3 requirement to design and locate SSCs important to safety to minimize the probability and effects of fires and explosions."*

The new rule provides actions that may be taken to establish compliance with 10 CFR 50.48(a), which requires each operating nuclear power plant to have a fire protection program plan that satisfies GDC 3, as well as specific requirements in that section. The transition process described in 10 CFR 50.48(c)(3)(ii) provides, in pertinent parts, that a licensee intending to adopt the new rule must, among other things, "modify the fire protection plan required by paragraph (a) of that section to reflect the licensee's decision to comply with NFPA 805." Therefore, to the extent that the contents of the existing fire protection program plan required by 10 CFR 50.48(a) are inconsistent with NFPA 805, the fire protection program plan must be modified to achieve compliance with the requirements in NFPA 805. All other requirements of 10 CFR 50.48 (a) and GDC 3 have corresponding requirements in NFPA 805.

A comparison of the current requirements in Appendix R with the comparable requirements in Section 3 of NFPA 805 shows that the two sets of requirements are consistent in many respects. This was further clarified in FAQ 07-0032, 10 CFR 50.48(a) and GDC 3 clarification

(ML081400292). The following tables provide a cross reference of fire protection regulations associated with the post-transition CNP fire protection program and applicable industry and CNP documents that address the topic. As noted above, 10 CFR 50.48(a) requires compliance with 10 CFR 50, Appendix A, GDC 3. Additionally, Section 1.4 of the CNP UFSAR specifies CNP Plant Specific Design Criterion (PSDC) 3 for fire protection. Table 5-2 provides a comparison of the 10 CFR 50, Appendix A, GDC 3 requirements.

10 CFR 50.48(a)

Table 5-1 10 CFR 50.48(a) – Applicability/Compliance Reference

10 CFR 50.48(a) Section(s)	Applicability/Compliance Reference
(1) Each holder of an operating license issued under this part or a combined license issued under part 52 of this chapter must have a fire protection plan that satisfies Criterion 3 of appendix A to this part. This fire protection plan must:	See details in subsections below
(i) Describe the overall fire protection program for the facility;	NFPA 805 Section 3.2 CNP NEI 04-02 Table B-1
(ii) Identify the various positions within the licensee's organization that are responsible for the program;	NFPA 805 Section 3.2.2 CNP NEI 04-02 Table B-1
(iii) State the authorities that are delegated to each of these positions to implement those responsibilities; and	NFPA 805 Section 3.2.2 CNP NEI 04-02 Table B-1
(iv) Outline the plans for fire protection, fire detection and suppression capability, and limitation of fire damage.	NFPA 805 Section 2.7 and Chapters 3 and 4 CNP NEI 04-02 B-1 and B-3 Tables
(2) The plan must also describe specific features necessary to implement the program described in paragraph (a)(1) of this section such as:	See details in subsections below
(i) Administrative controls and personnel requirements for fire prevention and manual fire suppression activities;	NFPA 805 Sections 3.3.1 and 3.4 CNP NEI 04-02 Table B-1
(ii) Automatic and manually operated fire detection and suppression systems; and	NFPA 805 Sections 3.5 through 3.10 and Chapter 4 CNP NEI 04-02 B-1 and B-3 Tables

Table 5-1 10 CFR 50.48(a) – Applicability/Compliance Reference

10 CFR 50.48(a) Section(s)	Applicability/Compliance Reference
(iii) The means to limit fire damage to structures, systems, or components important to safety so that the capability to shut down the plant safely is ensured.	NFPA 805 Section 3.3 and Chapter 4 CNP NEI 04-02 B-3 Table
(3) The licensee shall retain the fire protection plan and each change to the plan as a record until the Commission terminates the reactor license. The licensee shall retain each superseded revision of the procedures for 3 years from the date it was superseded.	NFPA 805 Section 2.7.1.1 requires that documentation (Analyses, as defined by NFPA 805 2.4, performed to demonstrate compliance with this standard) be maintained for the life of the plant. QAPD and PMP-2030-REC-001 "Records Management" provides station direction for the retention of records. Records associated with the fire protection plan are maintained as QA records for the life of the plant (FPPM, Section 3.6.5).
(4) Each applicant for a design approval, design certification, or manufacturing license under part 52 of this chapter must have a description and analysis of the fire protection design features for the standard plant necessary to demonstrate compliance with Criterion 3 of appendix A to this part.	Not applicable. CNP is licensed under 10 CFR 50.

General Design Criterion 3

Table 5-2 GDC 3 – Applicability/Compliance Reference

GDC 3, Fire Protection, Statement	CNP Specific Criterion 3	Applicability/Compliance Reference
Structures, systems, and components important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions.	A reactor facility shall be designed to ensure that the probability of events such as fires and explosions and the potential consequences of such events will not result in undue risk to the health and safety of the public.	NFPA 805 Chapters 3 and 4 CNP NEI 04-02 B-1 and B-3 Tables
Noncombustible and heat resistant materials shall be used wherever practical throughout the unit, particularly in locations such as the containment and control room.	Non-combustible and fire resistant materials shall be used throughout the facility wherever necessary to preclude such risk, particularly in areas containing critical portions of the facility such as containment, control room, and components of engineered safety features.	NFPA 805 Sections 3.3.2, 3.3.3, 3.3.4, 3.11.4 CNP NEI 04-02 B-1 Table
Fire detection and fighting systems of appropriate capacity and capability shall be provided and designed to minimize the adverse effects of fires on structures, systems, and components important to safety.	Not specifically referenced in the CNP UFSAR PSDC 3 "Fire Protection" discussion. However, topic is discussed in Section 9.8.1 of the CNP UFSAR.	NFPA 805 Chapters 3 and 4 CNP NEI 04-02 B-1 and B-3 Tables
Firefighting systems shall be designed to assure that their rupture or inadvertent operation does not significantly impair the safety capability of these structures, systems, and components	Not specifically referenced in the CNP UFSAR PSDC 3 "Fire Protection" discussion.	NFPA 805 Sections 3.4 through 3.10 and 4.2.1 CNP NEI 04-02 Table B-3

10 CFR 50.48(c)

Table 5-3 10 CFR 50.48(c) – Applicability/Compliance Reference

10 CFR 50.48(c) Section(s)	Applicability/Compliance Reference
(1) Approval of incorporation by reference. National Fire Protection Association (NFPA) Standard 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, 2001 Edition" (NFPA 805), which is referenced in this section, was approved for incorporation by reference by the Director of the Federal Register pursuant to 5 U.S.C. 552(a) and 1 CFR part 51.	General Information. NFPA 805 (2001 edition) is the edition used.
(2) Exceptions, modifications, and supplementation of NFPA 805. As used in this section, references to NFPA 805 are to the 2001 Edition, with the following exceptions, modifications, and supplementation:	General Information. NFPA 805 (2001 edition) is the edition used.
(i) Life Safety Goal, Objectives, and Criteria. The Life Safety Goal, Objectives, and Criteria of Chapter 1 are not endorsed.	The Life Safety Goal, Objectives, and Criteria of Chapter 1 of NFPA 805 are not part of the CNP LAR.
(ii) Plant Damage/Business Interruption Goal, Objectives, and Criteria. The Plant Damage/Business Interruption Goal, Objectives, and Criteria of Chapter 1 are not endorsed.	The Plant Damage/Business Interruption Goal, Objectives, and Criteria of Chapter 1 of NFPA 805 are not part of the CNP LAR.
(iii) Use of feed-and-bleed. In demonstrating compliance with the performance criteria of Sections 1.5.1(b) and (c), a high-pressure charging/injection pump coupled with the pressurizer power-operated relief valves (PORVs) as the sole fire-protected safe shutdown path for maintaining reactor coolant inventory, pressure control, and decay heat removal capability (i.e., feed-and-bleed) for pressurized-water reactors (PWRs) is not permitted.	Feed and bleed is not utilized as the sole fire-protected safe shutdown methodology.
(iv) Uncertainty analysis. An uncertainty analysis performed in accordance with Section 2.7.3.5 is not required to support deterministic approach calculations.	Uncertainty analysis was not performed for deterministic methodology.
(v) Existing cables. In lieu of installing cables meeting flame propagation tests as required by Section 3.3.5.3, a flame-retardant coating may be applied to the electric cables, or an automatic fixed fire suppression system may be installed to provide an equivalent level of protection. In addition, the italicized exception to Section 3.3.5.3 is not endorsed.	Electrical cable construction complies with a flame propagation test that was found acceptable to the NRC as documented in CNP NEI 04-02 Table B-1.

Table 5-3 10 CFR 50.48(c) – Applicability/Compliance Reference

10 CFR 50.48(c) Section(s)	Applicability/Compliance Reference
(vi) Water supply and distribution. The italicized exception to Section 3.6.4 is not endorsed. Licensees who wish to use the exception to Section 3.6.4 must submit a request for a license amendment in accordance with paragraph (c)(2)(vii) of this section.	I&M does not use the exception to Section 3.6.4. See CNP NEI 04-02 Table B-1.
(vii) Performance-based methods. Notwithstanding the prohibition in Section 3.1 against the use of performance-based methods, the fire protection program elements and minimum design requirements of Chapter 3 may be subject to the performance-based methods permitted elsewhere in the standard. Licensees who wish to use performance-based methods for these fire protection program elements and minimum design requirements shall submit a request in the form of an application for license amendment under § 50.90. The Director of the Office of Nuclear Reactor Regulation, or a designee of the Director, may approve the application if the Director or designee determines that the performance-based approach; (A) Satisfies the performance goals, performance objectives, and performance criteria specified in NFPA 805 related to nuclear safety and radiological release; (B) Maintains safety margins; and (C) Maintains fire protection defense-in-depth (fire prevention, fire detection, fire suppression, mitigation, and post-fire safe shutdown capability).	The use of performance-based methods for NFPA 805 Chapter 3 is requested by I&M. See Attachment L.
(3) Compliance with NFPA 805.	See details below

Table 5-3 10 CFR 50.48(c) – Applicability/Compliance Reference

10 CFR 50.48(c) Section(s)	Applicability/Compliance Reference
(i) A licensee may maintain a fire protection program that complies with NFPA 805 as an alternative to complying with paragraph (b) of this section for plants licensed to operate before January 1, 1979, or the fire protection license conditions for plants licensed to operate after January 1, 1979. The licensee shall submit a request to comply with NFPA 805 in the form of an application for license amendment under § 50.90. The application must identify any orders and license conditions that must be revised or superseded, and contain any necessary revisions to the plant's technical specifications and the bases thereof. The Director of the Office of Nuclear Reactor Regulation, or a designee of the Director, may approve the application if the Director or designee determines that the licensee has identified orders, license conditions, and the technical specifications that must be revised or superseded, and that any necessary revisions are adequate. Any approval by the Director or the designee must be in the form of a license amendment approving the use of NFPA 805 together with any necessary revisions to the technical specifications.	The CNP LAR was submitted in accordance with 10 CFR 50.90. The CNP LAR included applicable license conditions, orders, technical specifications/bases that needed to be revised and/or superseded.
(ii) The licensee shall complete its implementation of the methodology in Chapter 2 of NFPA 805 (including all required evaluations and analyses) and, upon completion, modify the fire protection plan required by paragraph (a) of this section to reflect the licensee's decision to comply with NFPA 805, before changing its fire protection program or nuclear power plant as permitted by NFPA 805.	The CNP LAR and transition report summarize the evaluations and analyses performed in accordance with Chapter 2 of NFPA 805.
(4) Risk-informed or performance-based alternatives to compliance with NFPA 805. A licensee may submit a request to use risk-informed or performance-based alternatives to compliance with NFPA 805. The request must be in the form of an application for license amendment under § 50.90 of this chapter. The Director of the Office of Nuclear Reactor Regulation, or designee of the Director, may approve the application if the Director or designee determines that the proposed alternatives: (i) Satisfy the performance goals, performance objectives, and performance criteria specified in NFPA 805 related to nuclear safety and radiological release; (ii) Maintain safety margins; and (iii) Maintain fire protection defense-in-depth (fire prevention, fire detection, fire suppression, mitigation, and post-fire safe shutdown capability).	No risk-informed or performance-based alternatives to compliance with NFPA 805 (per 10 CFR 50.48(c)(4)) were utilized by I&M.

5.2 Regulatory Topics

5.2.1 License Condition Changes

The current CNP fire protection license conditions 2.C(4) for Unit 1 and 2.C(3)(o) for Unit 2 will be replaced with the standard license condition based upon Regulatory Position 3.1 of RG 1.205, as shown in Attachment M.

5.2.2 Technical Specifications

I&M conducted a review of the TS to determine which TS are required to be revised, deleted, or superseded. As stated in Attachment N, I&M determined that no changes to the TS are needed for the proposed CNP adoption of the new fire protection licensing basis.

5.2.3 Orders and Exemptions

A review was conducted of I&M docketed correspondence to determine if there were any orders or exemptions that needed to be superseded or revised. A review was also performed to ensure that compliance with the physical protection requirements, security orders, and adherence to those commitments applicable to the plant are maintained. A discussion of affected orders and exemptions is included in Attachment O.

5.3 Regulatory Evaluations

No Significant Hazards Consideration

A written evaluation of the significant hazards consideration of a proposed license amendment is required by 10 CFR 50.92. According to 10 CFR 50.92, a proposed amendment to an operating license involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not:

- Involve a significant increase in the probability or consequences of an accident previously evaluated; or
- Create the possibility of a new or different kind of accident from any accident previously evaluated; or
- Involve a significant reduction in a margin of safety.

This evaluation is contained in Attachment Q.

Based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public. CNP has evaluated the proposed amendment and determined that it involves no significant hazards consideration.

Environmental Consideration

Pursuant to 10 CFR 51.22(b), an evaluation of the proposed amendment has been performed to determine whether it meets the criteria for categorical exclusion set forth in 10 CFR 51.22(c). That evaluation is discussed in Attachment R. The evaluation confirms that this proposed amendment meets the criteria set forth in 10 CFR 51.22(c)(9) for categorical exclusion from the need for an environmental impact assessment or statement.

5.4 Transition Implementation Schedule

I&M's schedule for transition of CNP to the new fire protection licensing basis is as follows:

- Implementation of new NFPA 805 fire protection program to include procedure changes, process updates, and training to affected plant personnel. This will occur within six (6) months after NRC approval.
- Attachment S provides a listing of plant modifications associated with the transition to NFPA 805. I&M will initiate the implementation of plant modifications following submittal of the LAR and anticipates completion of installation in the plant prior to issuance of the NRC SE.

6.0 REFERENCES

The following references were used in the development of this TR. Additional references are in the attachments to this TR.

6.1 NFPA 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, 2001 Edition."

6.2 NEI 00-01, "Guidance for Post-Fire Safe Shutdown Circuit Analysis," Revision 1, January 2005.

6.3 NEI 04-02, "Guidance for Implementing A Risk-Informed, Performance-Based Fire Protection Program Under 10 CFR 50.48(c)," Revision 2.

6.4 Regulatory Guide 1.205, "Risk-Informed, Performance-Based Fire Protection for Existing Light-Water Nuclear Power Plants," Revision 1, December 2009.

6.5 Regulatory Guide 1.174," An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," Revision 1, dated November 2002.

6.6 I&M Letter AEP:NRC:5048 to NRC, Donald C. Cook Nuclear Plant Units 1 and 2 Docket Nos. 50-315/50-316 "Letter of Intent to Adopt NFPA 805, Performance-Based Standard For Fire Protection For Light Water Reactor Generating Plants, 2001 Edition," dated December 28, 2005 (ML060090370).

6.7 NRC Letter to Donald C. Cook Nuclear Plant, Units 1 and 2, "Response to Letter of Intent to Adopt 10 CFR 50.48(C), National Fire Protection Association Standard 805," dated February 14, 2006 (ML060250675).

6.8 NRC Enforcement Policy: Extension of Discretion Period of Interim Enforcement Policy; Federal Register Notice 19905, Vol. 71, No. 74, dated April 18, 2006.

6.9 I&M Request for Extension of the Enforcement Discretion Period to December 21, 2008, dated October 16, 2006 (ML062970256).

6.10 NRC Letter to Donald C. Cook Nuclear Plant (DCCNP), Units 1 and 2 "Extension of Enforcement Discretion Period during Implementation of National Fire Protection Association (NFPA) Standard 805," dated January 4, 2007 (ML063330634).

6.11 NRC Revision to Interim Enforcement Policy; Federal Register 73 FR 52705, dated September 10, 2008.

6.12 I&M Letter AEP-NRC-2008-36 to NRC, Donald C. Cook Nuclear Plant Units 1 and 2, "Request for Extension of Enforcement Discretion and Revised Submittal Date for 10 CFR 50.48(c) License Amendment Request," dated September 29, 2008 (ML082820328).

6.13 NRC Letter to Donald C. Cook Nuclear Plant, Units 1 and 2, "Evaluation of the Request for an Extension of Enforcement Discretion in Accordance with the Interim Enforcement Policy for Fire Protection Issues during Transition to National Fire Protection Standard NFPA 805," dated December 19, 2008 (ML083450002).

6.14 NUREG/CR 6850, EPRI 1011989, "EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities," dated September 2005.

6.15 NUREG/CR-6850 Supplement 1, EPRI1019259, "Fire Probabilistic Risk Assessment Methods Enhancements," dated September 2010.

6.16 NFPA Frequently Asked Question (FAQ) 07-0054, "Demonstrating Compliance with Chapter 4 of NFPA 805," Revision 1 (Closure Memo ML110140183).

6.17 NFPA Frequently Asked Question (FAQ) 07-0040, "Non-Power Operations Clarification," Revision 4 (Closure Memo ML082200528).

6.18 CNP Technical Evaluation R1900-005-001, "Non-Power Operation Modes Transition Review," Revision 0.

6.19 NFPA Frequently Asked Question (FAQ) 07-0038, "Lessons Learned on Multiple Spurious Operations," Revision 3 (Closure Memo ML110140242).

6.20 EPRI TR-1016735, "Fire PRA Methods Enhancements."

6.21 NUREG-1921, EPRI/NRC-RES "Fire Human Reliability Analysis Guidelines," Draft.

6.22 Letter (LTR-RAM-II-10-041) from PWR Owner's Group to CNP, "Results of the CNP Fire PRA Review," dated July 20, 2010.

6.23 CNP Calculation No. PRA-FIRE-17663-002-LAR," Fire PRA Component Selection," Revision 0.

6.24 CNP Safe Shutdown Capability Analysis, Revision 14.

6.25 PWROG Generic MSO List (WCAP-16933-NP).

6.26 AEP Calculation PRA-NUPRA-002, Revision 0, "2008 WinNUPRA PRA Model of Record".

6.27 CNP Report No. PRA-FIRE-17663-002B-LAR, "Multiple Spurious Operations Expert Panel Report," Revision 0.

6.28 CNP Technical Evaluation No. R1900-0024-001, "Nuclear Safety Capability Assessment," Revision 0.

6.29 CNP Calculation No. PRA-FIRE-17663-005-LAR, "Fire PRA Fire Induced Risk Model," Revision 0.

6.30 CNP Technical Evaluation No. R1900-0043-0001, "Fire PRA Cable Selection and Routing," Revision 0.

6.31 CNP Technical Evaluation No. R1900-0049-0001, "Detailed Circuit Failure Analysis," Revision 0.

6.32 CNP Calculation No. PRA-FIRE-17663-010-LAR, "Fire PRA Circuit Failure Likelihood Analysis," Revision 0.

6.33 CNP Calculation No. PRA-FIRE-17663-011A-LAR, "Fire PRA Quantification of Individual Areas," Revision 0.

6.34 CNP Calculation No. PRA-FIRE-17663-011B-LAR, "Fire PRA Main Control Room Analysis," Revision 0.

6.35 CNP Calculation No. PRA-FIRE-17663-011C-LAR, "Fire PRA Multi-Compartment Analysis," Revision 0.

6.36 CNP Technical Evaluation R1900-0026-001, "Recovery Action Transition for NFPA 805," Revision 0.

6.37 NFPA Frequently Asked Question (FAQ) 07-0030, "Establishing Recovery Actions," Revision 5 (Closure Memo ML110070485).

6.38 NFPA Frequently Asked Question (FAQ) 09-0056, "Radioactive Release Transition" Revision 2 (Closure Memo ML102920405).

6.39 NFPA Frequently Asked Question (FAQ) 10-0059, "NFPA 805 Monitoring," Revision 1 (ML111180481), dated 4-21-11.

6.40 CNP Quality Assurance Program Description (QAPD), Revision 20.

6.41 CNP Procedure 12-EHP-9010-PRA-001, "PRA Model Update Procedure," Revision 1.

6.42 ASME/ANS RA-Sa-2009, "Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications."

6.43 CNP Procedure 12-EHP-5040-DES-003, "Calculations and Reports," Revision 17.

6.44 CNP Procedure PMP-2270-EVL-002, "Evaluation of Fire Protection Program Changes," Revision 4.

6.45 CNP Calculation PRA-FIRE-17663-015-LAR, "Fire PRA Uncertainty and Sensitivity Analyses," Revision 0.

6.46 CNP Procedure 12-FPP-2270-066-013, "Control of Inoperable Fire Protection Systems, Structures, or Components," Rev. 1, All Sections.

6.47 IN 92-18, "Potential for Loss of Remote Shutdown Capability During a Control Room Fire," February 28, 1992.

Attachments

A. NEI 04-02 Table B-1 – Transition of Fundamental FPP and Design Elements

143 Pages

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

NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
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 - Section Heading, see sub-sections for any specific compliance statements.	• N/A	N/A - Section Heading, see sub-sections for any specific compliance statements.	N/A
3.2 Fire Protection Plan	N/A	• N/A	N/A - Section Heading, see sub-sections for any specific compliance statements.	N/A
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	A site-wide fire protection program (FPP) has been established. The purpose of the CNP FPP is to incorporate, identify and discuss the applicable commitments, documents, administrative controls, departmental responsibilities and activities which together form the CNP FPP.	PMI-2270, "Fire Protection Program", Rev. 30, All Sections FPPM, Rev. 11, Section 3

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

NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
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	The FPP procedure defines management authority and responsibilities and establishes the general policy for the site FPP.	PMI-2270, "Fire Protection Program", Rev. 30, All Sections FPPM, Rev. 11, Section 3
3.2.2.1 [Management Policy on Senior Management]	The policy document shall designate the senior management position with immediate authority and responsibility for the fire protection program.	• Complies	The Plant Manager is responsible for development, implementation, and periodic assessment of the CNP FPP.	PMI-2270, "Fire Protection Program", Rev. 30, Section 3.1 FPPM, Rev. 11, Section 3.7
3.2.2.2 [Management Policy on Daily Administration]	The policy document shall designate a position responsible for the daily administration and coordination of the fire protection program and its implementation.	• Complies	The Fire Protection Program Manager is responsible for assuring adequate implementation of the overall FPP.	PMI-2270, "Fire Protection Program", Rev. 30, Section 3.1.4 FPPM, Rev. 11, Section 3.7
3.2.2.3 [Management Policy on Interfaces]	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	PMI-2270 identifies the various plant positions having the authority for implementing the various areas of the FPP. The FPPM identifies interfaces between the FPP and other organizations.	PMI-2270, "Fire Protection Program", Rev. 30, Section 3.1.4 FPPM, Rev. 11, Sections 3.7.1.2.1, 3.7.1.3.1 and 3.7.1.4.2
3.2.2.4 [Management Policy on AHJ]	The policy document shall identify the appropriate AHJ for the various areas of the fire protection program.	• Complies	The AHJ is identified in CNP Procedure PMI-2270 and in the FPPM.	PMI-2270, "Fire Protection Program", Rev. 30 FPPM, Rev. 11

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
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:	• Complies	Procedures have been established for implementation of the FPP. These procedures accomplish the requirements outlined in the sub-sections of this element.	PMI-2270, "Fire Protection Program", Rev. 30, All Sections
3.2.3 Procedures (1)	Inspection, testing, and maintenance for fire protection systems and features credited by the fire protection program.	• Complies with clarification	**Complies with clarification:** Procedures have been established for inspection, testing, and maintenance for fire protection systems and features credited by the FPP. Where practical, performance-based surveillance frequencies may be established as described in Electric Power Research Institute (EPRI) Technical Report (TR) 1006756, "Fire Protection Surveillance Optimization and Maintenance Guide for Fire Protection Systems and Features".	PMI-4030, "Technical Specification Surveillance Test Program", Rev. 34, All Sections PMP-2291-PLN-001, "Work Control Activity Planning Process", Rev. 40, All Sections 12-FPP-2270-066 Series 1-EHP-4030-166 Series 2-EHP-4030-266 Series Electric Power Research Institute (EPRI) Technical Report (TR) 1006756, "Fire Protection Surveillance Optimization and Maintenance Guide for Fire Protection Systems and Features"

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.2.3 Procedures (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	• Complies	Procedures have been established to implement compensatory actions when fire protection systems and other systems credited by the FPP cannot perform their intended function.	PMI-2270, "Fire Protection Program", Rev. 30 PMP-2291-PLN-001, "Work Control Activity Planning Process", Rev. 40, All Sections 12-FPP-2270-066-013, "Control of Inoperable Fire Protection Systems, Structures, or Components", Rev. 1, All Sections
3.2.3 Procedures (3)	Reviews of fire protection program — related performance and trends	• Complies with Required Action	Procedures have been established for reviewing performance and trends of the FPP. **Required Action:** The monitoring program required by NFPA 805 Section 2.6 will be implemented after the LAR approval as part of the FPP transition to NFPA 805, in accordance with NFPA 805 FAQ 10-0059, and will include a process that reviews the FPP performance and trends in performance. Refer to Attachment S of the Transition Report for details.	PMI-4030, "Technical Specification Surveillance Test Program", Rev. 34, Section 3.2.4 PMP-2291-PLN-001, "Work Control Activity Planning Process", Rev. 40, All Sections CNP Fire Protection Monitoring Program PMP-7034-SAP-001, "Conduct of Self-Assessments", Rev. 20 AR GT2010-13233, "Actions to Support Implementation of NFPA 805"

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.2.3 Procedures (4)	Reviews of physical plant modifications and procedure changes for impact on the fire protection program	• Complies	Procedures have been established for reviews of physical plant modifications and procedure changes for impact on the FPP.	PMP-5043-CCD-001, "Configuration Change Determinations", Rev. 28 12-EHP-2270-FPIR-001, "Fire Protection Program Impact Review", Rev. 1, All Sections PMP-2270-EVL-002, "Evaluation of Fire Protection Program Changes", Rev. 4, All Sections 12-EHP-2270-EVL-001, "Preparation and Approval of Fire Protection Technical Evaluations", Rev. 0
3.2.3 Procedures (5)	Long-term maintenance and configuration of the fire protection program	• Complies	Procedures have been established for long-term maintenance and configuration of the FPP.	PMP-5043-CCD-001, "Configuration Change Determinations", Rev. 28 12-EHP-2270-FPIR-001, "Fire Protection Program Impact Review", Rev. 1, All Sections PMP-2270-EVL-002, "Evaluation of Fire Protection Program Changes", Rev. 4, All Sections 12-EHP-2270-EVL-001, "Preparation and Approval of Fire Protection Technical Evaluations", Rev. 0 "Quality Assurance Program Description", Rev. 20.

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.2.3 Procedures (6)	Emergency response procedures for the plant industrial fire brigade	• Complies	An emergency response procedure for the plant industrial fire brigade has been established (Fire Pre-Plan).	PMP-2270-FRP-001, "Fire Response Plan", Rev. 11, All Sections CNP Fire Pre-Plans, Volumes I, II, and III, Revisions 9, 7, and 12 respectively
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:	• Complies	The CNP FPP establishes, documents, and implements, specific requirements for fire prevention. The two basic components of fire prevention are met as described in the sub-sections of this element.	PMI-2270, "Fire Protection Program", Rev. 30, Sections 4.3 and 4.4
3.3 Prevention (1)	Prevention of fires and fire spread by controls on operational activities	• Complies	CNP procedures establish controls on operation activities in order to prevent fires and fire spread.	PMI-2270, "Fire Protection Program", Rev. 30, Section 4.4 PMP-2270-WBG-001, "Welding, Burning and Grinding Activities", Rev. 9, All Sections 12-PPP-2270-066-011, "Fire Watch Activities", Rev. 5, All Sections PMP-2270-CCM-001, "Control of Combustible Materials", Rev. 8, All Sections

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.3 Prevention (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	CNP procedures establish design controls that restrict the use of combustible materials.	PMI-2270, "Fire Protection Program", Rev. 30, Section 4.3 12-EHP-2270-FPIR-001, "Fire Protection Program Impact Review", Rev. 1, All Sections
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	CNP procedures establish requirements to address the control of ignition sources and the use of transient combustible materials during all aspects of plant operations. These procedures 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.	PMI-2270, "Fire Protection Program", Rev. 30, Sections 4.3 and 4.4 PMP-2270-CCM-001, "Control of Combustible Materials", Rev. 8, All Sections 12-FPP-2270-066-012, "Transient Combustible Monitoring", Rev 7, All Sections PMP-2270-WBG-001, "Welding, Burning, and Grinding Activities", Rev. 9, All Sections "Quality Assurance Program Description", Rev. 20.

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.3.1.1 General Fire Prevention Activities	The fire prevention activities shall include but not be limited to the following program elements:	• Complies	Plant procedures for fire prevention activities have been implemented. The procedures address, at a minimum, the FPP elements identified in this section, but are not limited to these elements. The NFPA 805 code requirements for this element are satisfied.	Refer to basis documentation in the sub-sections of this element.
3.3.1.1 General Fire Prevention Activities (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	• Complies with Required Action	I&M establishes training requirements for all plant personnel, including plant fire prevention procedures, fire reporting, and familiarization with plant emergency alarms. **Required Action:** Initial General Employee Training (GET) to be verified and updated, after the LAR approval as part of the FPP transition to NFPA 805, to include the minimum FPP elements as discussed in Section K to NEI-04-02 (FAQ 06-0028). Refer to Attachment S of the Transition Report for details.	GE-1-7000, "DC Cook General Employee Training", Rev. 12 Nuclear Energy Institute (NEI) 04-02, "Guidance for Implementing a Risk-Informed, Performance-Based Fire Protection Program under 10 CFR 50.48(c)", Rev. 2 / Section K.3 (FAQ 06-0028) AR GT2010-13233, "Actions to Support Implementation of NFPA 805"

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.3.1.1 General Fire Prevention Activities (2)	Documented plant inspections including provisions for corrective actions for conditions where unanalyzed fire hazards are identified	• Complies	CNP procedures establish requirements for spot plant inspections to ensure that combustibles are properly controlled and are not allowed to accumulate in amounts that are in excess of that analyzed in the Fire Hazards Analysis. Daily tours by the fire brigade are established. If problems with conditions or combustible loading are identified, corrective actions are required to be taken.	12-PPP-2270-066-012, "Transient Combustible Monitoring", Rev. 7, All Sections 12-FPP-2270-066-011, "Fire Watch Activities", Rev. 6, Section 4.1.1
3.3.1.1 General Fire Prevention Activities (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	• Complies	Procedures have been established for reviews of physical plant modifications and maintenance for impact on the FPP.	PMP-5043-CCD-001, "Configuration Change Determinations", Rev. 29 12-EHP-2270-FPIR-001, "Fire Protection Program Impact Review", Rev. 1, All Sections PMP-2270-EVL-002, "Evaluation of Fire Protection Program Changes", Rev. 4, All Sections 12-EHP-2270-EVL-001, "Preparation and Approval of Fire Protection Technical Evaluations", Rev. 0, All Sections 12-EHP-5040-MOD-009, "Engineering Change Reference Guide", Rev. 27, All Sections

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
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:	• Complies	Plant procedures for the control of general housekeeping practices and the control of transient combustibles have been implemented. The procedures address, at a minimum, the FPP elements identified in this section, but are not limited to these elements. I&M believes that the NFPA 805 code requirements for this element are satisfied at CNP.	PMP-2270-CCM-001, "Control of Combustible Materials", Rev. 8, All Sections 12-PPP-2270-066-012, "Transient Combustible Monitoring", Rev. 7, All Sections PMP-2220-HSK-001, "Housekeeping and Material Condition", Rev. 6, Section 4
3.3.1.2 Control of Combustible Materials (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.*	• Complies • Complies with clarification	**Complies:** All wood smaller than 6 inch by 6 inch used in the power block is required to be fire-retardant treated. **Complies with clarification:** Alternate protection methods may be allowed with Fire Protection Coordinator consent including: a. Applying a fire retardant paint in accordance with manufacturer's direction b. For short durations, covering the material with a fire retardant cloth (e.g., Fire Blanket, Herculite, etc.)	PMP-2270-CCM-001, "Control of Combustible Materials", Rev. 8, Section 3.5

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.3.1.2 Control of Combustible Materials (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"	• Complies	All sheet plastic used in the power block is required to meet the requirements of NFPA 701.	PMP-2270-CCM-001, "Control of Combustible Materials", Rev. 8, Section 3.4
3.3.1.2 Control of Combustible Materials (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.	• Complies • Complies with clarification	**Complies:** Whenever possible, equipment or parts shipped or packed in combustible materials are required to be removed from their shipping crates or containers prior to those items being taken into a safety related area. Those items that cannot be removed from shipping/packing materials may be taken into safety related areas when needed, unpacked and the shipping/packing materials immediately removed. **Complies with clarification:** All waste, debris, scrap, or other combustibles resulting from an activity is required to be cleaned up, and stored in proper containers or removed from the area during the work activity, upon completing the activity and/or at the end of each work shift. All waste is required to be disposed of in proper containers.	PMP-2270-CCM-001, "Control of Combustible Materials", Rev. 8, Section 3.3 PMP-2220-HSK-001, "Housekeeping and Material Condition", Rev. 6, Section 4.6.4 12-FPP-2270-066-012, "Transient Combustible Monitoring", Rev 7, All Sections

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.3.1.2 Control of Combustible Materials (4)	Combustible storage or staging areas shall be designated, and limits shall be established on the types and quantities of stored materials.	• Complies	Transient combustible storage is controlled on the basis of physical location and restricted to the limitations set forth in the individual Fire Safety Analysis Reports. A permit must be acquired to store transient combustible materials outside of designated transient combustible material storage zones.	PMP-2270-CCM-001, "Control of Combustible Materials", Rev 8, All Sections CNP Fire Safety Analysis Reports
3.3.1.2 Control of Combustible 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."	• Complies with clarification • Complies with use of EEEEs	**Complies with clarification:** Plant procedures are in place to control the use and storage of flammable and combustible liquids. These controls use NFPA 30 as a developmental reference. No other NFPA Standards were determined to be applicable based on guidance in NEI 04-02, section K.1 (FAQ 06-0020). **Complies with use of EEEEs:** CNP complies with NFPA 30, 1987 edition, as evaluated in the CNP NFPA 30 Code Compliance Evaluation.	PMP-2270-CCM-001, "Control of Combustible Materials", Rev. 8, Section 3.9 "NFPA 30 Code Compliance Evaluation for Donald C. Cook Nuclear Plant Unit 1 and 2", Rev. 0, All Sections "Donald C. Cook Nuclear Plant NFPA Code Deviations and Justifications", Rev. 2 Nuclear Energy Institute (NEI) 04-02, "Guidance for Implementing a Risk-Informed, Performance-Based Fire Protection Program under 10 CFR 50.48(c)", Rev. 2 / Section K.1 (FAQ 06-0020)

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.3.1.2 Control of Combustible Materials (6)	Controls on use and storage of flammable gases shall be in accordance with applicable NFPA standards.	• Complies with clarification • Complies with use of EEEEs	**Complies with clarification:** A plant procedure is in place to control use and storage of flammable gases. These controls use NFPA 50A "Standard for Gaseous Hydrogen Systems at Consumer Sites", as a developmental reference. No other NFPA Standards were determined to be applicable based on guidance in NEI 04-02, section K.1 (FAQ 06-0020). **Complies with use of EEEEs:** CNP complies with NFPA 50A, 1999 edition, as evaluated in Engineering Equivalency Evaluation 14.1.1.	PMP-2270-CCM-001, "Control of Combustible Materials", Rev. 8, Section 3.10 Engineering Equivalency Evaluation 14.1.1, "CNP Fire Protection Code Conformance Review", Rev. 0 Nuclear Energy Institute (NEI) 04-02, "Guidance for Implementing a Risk-Informed, Performance-Based Fire Protection Program under 10 CFR 50.48(c)", Rev. 2 / Section K.1 (FAQ 06-0020)
3.3.1.3 Control of Ignition Sources	Control of Ignition Sources.	• N/A	N/A - Section Heading, see sub-sections for any specific compliance statements.	N/A

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.3.1.3.1 [Control of Ignition Sources Code Requirements]	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 with clarification • Complies with use of EEEEs	**Complies with clarification:** A hot work safety procedure and a fire watch procedure have been developed, implemented, and are periodically updated as necessary. Fire watch personnel may have multiple duties. **Complies with use of EEEEs:** The hot work safety procedure and fire watch procedure comply with the requirements of NFPA 51B, 1971 Edition, and NFPA 241, 2000 Edition, as evaluated in Engineering Equivalency Evaluation 14.1.1.	PMP-2270-WBG-001, "Welding, Burning and Grinding Activities", Rev. 9, All Sections 12-FPP-2270-066-011, "Fire Watch Activities", Rev. 5, All Sections Engineering Equivalency Evaluation 14.1.1, "CNP Fire Protection Code Conformance Review", Rev. 0
3.3.1.3.2 [Control of Ignition Sources Smoking Limitations]	Smoking and other possible sources of ignition shall be restricted to properly designated and supervised safe areas of the plant.	• Complies	Smoking is not allowed in any plant building or any other specific area posted as "No Smoking", per procedure PMI-2270. Restrictions for other possible ignition sources are addressed by sections 3.3.1.3.1, 3, and 4.	PMI-2270, "Fire Protection Program", Rev. 30, Section 4.4.2

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.3.1.3.3 [Control of Ignition Sources for Leak Testing]	Open flames or combustion-generated smoke shall not be permitted for leak or air flow testing.	• Complies	Precautions and limitations are listed for all fire protection testing procedures. These precautions and limitations require that there be no deviations from the listed test sequence unless specific instructions to the contrary exist within the test procedure. Test procedures do not use open flames or combustion-generated smoke for leak or air flow testing.	12-FPP-2270-066 Series 1-EHP-4030-166 Series 2-EHP-4030-266 Series
3.3.1.3.4 [Control of Ignition sources on Portable Heaters]	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	CNP procedures control the use of portable electrical heaters in the plant. CNP procedures also require that portable fuel-fired heaters are not permitted in plant areas containing equipment important to nuclear safety or where there is a potential for radiological releases resulting from a fire.	PMP-2270-CCM-001, "Control of Combustible Materials", Rev. 8, Section 3.3.15 and 3.3.14 PMI-2270, "Fire Protection Program", Rev. 30

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
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 • Complies by previous NRC approval	**Complies:** Interior walls, floors, and structural components are noncombustible. Noncombustible is defined by NFPA 220-1999 edition, as a material that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors when subjected to fire or heat. **Complies by previous NRC approval:** By the response to Appendix A to Branch Technical Position APCSB 9.5-1 for Units No. 1 and 2, dated January 31, 1977, item D.1.(d) I&M stated: *"Interior wall and structural components, thermal insulation, radiation shielding, and sound proofing are, to the extent possible, noncombustible or have the UL flame spread, smoke, and fuel contribution rating of 25 or less. Where this was not possible, these materials are protected by other means. In the two cases where this occurred (noted below) the following was done:*	I&M response to Appendix A to Branch Technical Position APCSB 9.5-1 for Units No. 1 and 2, 1/31/77, item D.1.(d) NRC Safety Evaluation supporting Amendment Nos. 31 and 12 to License No. DPR-58 and DPR-74, 7/31/79, page 17. 12-EHP-2270-FPIR-001, "Fire Protection Program Impact Review", Rev. 1, All Sections

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			Building expansion or seismic gaps were filled in some cases with urethane or styrene foam plastic to act as a seal to prevent infiltration of air or sand, or to act as non-removable forms between concrete pours. In areas where this material violated fire rated walls or where the material, if ignited, could potentially damage adjacent equipment; a fire proofing method was devised by raking out the foam plastic to a four or six inch depth, filling the void with rolled refractory fiber insulation held in place with glass fiber screening and noncombustible silicone adhesive, all of which is covered with a glass fiber reinforced silicone sheet material cemented to the concrete walls with noncombustible silicone adhesive. Tests of this concept were conducted in March 1975. The test was an ASTM E-119 wall test where the refractory fiber/silicone sheet was used to seal a pipe sleeve. After five hours of exposure, the seal was still intact and functional." The NRC Safety Evaluation, dated July 31, 1979 states:	

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			"We conclude that the administrative controls [including controls on construction of walls, floors and components required to maintain structural integrity], fire brigade equipment and training conform to the recommendations of the National Fire Protection Association and Appendix A to Branch Technical Position 9.5-1 and are, therefore, acceptable." The noncombustible features (i.e. the expansion and seismic gap filling materials, the interior wall and structural components, thermal insulation, radiation shielding and sound proofing), as approved by the SE Report, are still installed at CNP. There have been no plant modifications or other changes that would invalidate the basis for approval. These features have not been changed.	

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
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 by previous NRC approval • Complies with use of EEEEs	**Complies by previous NRC approval:** By the response to Appendix A to Branch Technical Position APCSB 9.5-1 for Units No. 1 and 2, dated January 31, 1977, item D.1.(d) I&M stated: *"Interior wall and structural components, thermal insulation, radiation shielding, and sound proofing are, to the extent possible, noncombustible or have the UL flame spread, smoke, and fuel contribution rating of 25 or less."* The NRC Safety Evaluation, dated July 31, 1979 states: *"We conclude that the administrative controls [including interior wall, ceiling and floor finishes], fire brigade equipment and training conform to the recommendations of the National Fire Protection Association and Appendix A to Branch Technical Position 9.5-1 and are, therefore, acceptable."* By letter dated May 30, 1986, I&M informed the NRC that carpeting had been installed in both units' control rooms to close out human factors concerns as a result of the Detailed Control Room Design	I&M response to Appendix A to Branch Technical Position APCSB 9.5-1 for Units No. 1 and 2, 1/31/77, item D.1.(d) NRC Safety Evaluation supporting Amendment Nos. 31 and 12 to License No. DPR-58 and DPR-74, 7/31/79, page 17 I&M Letter to NRC, "Control Room Carpeting", 5/30/1986 NRC Safety Evaluation, "Installation of Carpet in the Control Rooms", 6/16/88 Engineering Equivalency Evaluation 11.55, "Flammability of Floor Coating Systems" PMI-2270, "Fire Protection Program", Rev. 30 12-EHP-2270-FPIR-001, "Fire Protection Program Impact Review", Rev. 1, All Sections AR: GT00120103

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			Review. The licensee stated that this carpeting had a flame spread rating of 30 which is higher than the 25 recommended by NRC staff guidance. The carpeting also has a radiant flux rating of .98 watts/cm. The NRC Safety Evaluation, "Installation of Carpet in the Control Rooms", dated June 16, 1988 states: *"The carpeting installed in the control room deviates from NRC staff guidance because the flame spread rating is higher than identified in Section D.1.d of Appendix A to BTP APCSB 9.5-1. The concern is that a fire involving carpeting with a high flame spread could propagate rapidly, potentially damaging safe shutdown equipment and also making the control room uninhabitable. However, the flame spread of the carpeting installed in the D.C. Cook control rooms is only slightly higher than staff guidance, 30 versus 25.* *Since the issuance of the staff guidelines, objections have been raised in the fire protection industry regarding the measure of flame spread to evaluate floor*	

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			coverings. The test method used to evaluate flame spread, NFPA 255, "Surface Burning Characteristics of Building Materials," holds the test specimen upside down in a position that bears no resemblance to its position when it is installed. In a effort to correctly assess the flame spread hazard of floor coverings, the concept of radiant flux was used and NFPA 253, "Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source" was developed. NFPA 253 involves subjecting a horizontal floor covering specimen to a radiant energy flux which decreases along the length of the specimen according to a standard energy flux vs. distance profile. The higher the critical heat flux rating a carpet has, the more resistive it is to flame spread. *The subject carpeting has a critical heat flux of .98 watts/cm(2). This rating is significantly higher than the minimum of 0.45 watts/cm(2) used to define a Class I interior finish in NFPA 101, "Life Safety Code." Since the control rooms are continuously manned, fires*	

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			would be detected quickly and extinguished using portable fire extinguishers. Based on the above, there is reasonable assurance that the slightly higher flame spread rating of control room carpeting would not adversely affect plant safety. *Based on the above evaluation, the staff finds that the installation of carpeting in the control rooms which has a flame spread rating of 30 is an acceptable deviation from the guidance provided in Appendix A to BTP APCSB 9.5-1, Section D.1.d."* The carpeting, as approved by the SE Report, is still installed in the control room at CNP. There have been no plant modifications or other changes that would invalidate the basis for approval. The carpeting features remain unchanged. **Complies with use of EEEEs:** Epoxy floor coating is used in some fire areas. This has been evaluated as acceptable via an Engineering Equivalency Evaluation and AR GT00120103.	

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.3.4 Insulation Materials	Thermal insulation materials, radiation shielding materials, ventilation duct materials, and soundproofing materials shall be noncombustible or limited combustible.	• Complies • Complies by previous NRC approval	**Complies:** Thermal insulation materials, shielding materials, ventilation duct materials and soundproofing materials at CNP are of limited combustibility. **Complies by previous NRC approval:** By the response to Appendix A to Branch Technical Position APCSB 9.5-1 for Units No. 1 and 2, dated January 31, 1977, item D.1.(d) I&M stated: *"Interior wall and structural components, thermal insulation, radiation shielding, and sound proofing are, to the extent possible, noncombustible or have the UL flame spread, smoke, and fuel contribution rating of 25 or less. Where this was not possible, these materials are protected by other means. In the two cases where this occurred (noted below) the following was done:* *Building expansion or seismic gaps were filled in some cases with urethane or styrene foam plastic to act as a seal to prevent infiltration of air or sand, or to act as non-removable forms between concrete pours. In areas where this material violated fire rated walls or where*	ES-PIPE-1007-QCS, "Thermal Insulation", Rev. 3, All Sections 12-THP-6010-RPP-015, "Temporary Shielding", Rev. 7, Section 3.5 ES-HVAC-0804-QCN, "Nuclear Grade Ductwork", Rev. 1, Section 4 ES-HVAC-0806-QCS, "Conventional HVAC Ductwork", Rev. 0, Section 4 I&M response to Appendix A to Branch Technical Position APCSB 9.5-1 for Units No. 1 and 2, 1/31/77, item D.1.(d) NRC Safety Evaluation supporting Amendment Nos. 31 and 12 to License No. DPR-58 and DPR-74, 7/31/79, page 17 and table 1, item 8. 12-EHP-2270-FPIR-001, "Fire Protection Program Impact Review", Rev. 1, All Sections

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			the material, if ignited, could potentially damage adjacent equipment; a fire proofing method was devised by raking out the foam plastic to a four or six inch depth, filling the void with rolled refractory fiber insulation held in place with glass fiber screening and noncombustible silicone adhesive, all of which is covered with a glass fiber reinforced silicone sheet material cemented to the concrete walls with noncombustible silicone adhesive. Tests of this concept were conducted in March 1975. The test was an ASTM E-119 wall test where the refractory fiber/silicone sheet was used to seal a pipe sleeve. After five hours of exposure, the seal was still intact and functional." The NRC Safety Evaluation, dated July 31, 1979 states: *"We conclude that the administrative controls [including controls on thermal insulation, radiation shielding materials, ventilation duct materials and soundproofing materials], fire brigade equipment and training conform to the recommendations of the National Fire Protection Association and Appendix A to*	

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			Branch Technical Position 9.5-1 and are, therefore, acceptable." The noncombustible features (i.e. the expansion and seismic gap filling materials, the interior wall and structural components, thermal insulation, radiation shielding and sound proofing), as approved by the SE Report, are still used at CNP. There have been no plant modifications or other changes that would invalidate the basis for approval. These features have not been changed.	
3.3.5 Electrical.	Electrical	• N/A	N/A - Section Heading, see sub-sections for any specific compliance statements	N/A

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.3.5.1 [Electrical Wiring Above Suspended Ceiling Limitations]	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 by previous NRC approval	By the response to Appendix A to Branch Technical Position APCSB 9.5-1 for Units No. 1 and 2, dated January 31, 1977, item D.1.(f) I&M stated: *"The only locations containing Class I equipment with suspended ceilings are each of the control rooms. The ceiling in this case consists of acoustic metal tiles which are noncombustible, and plastic diffusers (egg crate) under the recessed fluorescent lighting. These diffusers meet the UL 25 flame spread requirements."* The NRC Safety Evaluation, dated July 31, 1979 states: *"We conclude that the administrative controls [including controls on wiring above suspended ceilings], fire brigade equipment and training conform to the recommendations of the National Fire Protection Association and Appendix A to Branch Technical Position 9.5-1 and are, therefore, acceptable."* The suspended ceiling configuration (i.e. noncombustible tiles with diffusers meeting UL 25 flame spread requirements), as approved by the SE Report, is	I&M response to Appendix A to Branch Technical Position APCSB 9.5-1 for Units No. 1 and 2, 1/31/77, item D.1.(f) NRC Safety Evaluation supporting Amendment Nos. 31 and 12 to License No. DPR-58 and DPR-74, 7/31/79, page 17 and table 1, item 3.D.1. 12-EHP-2270-FPIR-001, "Fire Protection Program Impact Review", Rev. 1, All Sections

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			still installed at CNP. There have been no plant modifications or other changes that would invalidate the basis for approval. This configuration has not been changed.	
3.3.5.2 [Electrical Raceway Construction Limits]	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	All exposed electrical raceways are metal tray or metal conduit. In general, all cable is run through conduits or trays, with the exception of short cable air drops. The approximately 3 foot air drops align with the guidance of Section K.4 to NEI-04-02 (FAQ 06-0021) and are therefore acceptable.	ES-CABLE-0221-QCN, "Design and Installation Criteria for Cable, Trough, and Conduit", Rev. 8, All Sections Nuclear Energy Institute (NEI) 04-02, "Guidance for Implementing a Risk-Informed, Performance-Based Fire Protection Program under 10 CFR 50.48(c)", Rev. 2 / Section K.4 (FAQ 06-0021)

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.3.5.3 [Electrical Cable Flame Propagation Limits]	Electric cable construction shall comply with a flame propagation test as acceptable to the AHJ. Note: the exception to this section is not endorsed by 10 CFR 50.48(c)(2)(v) and has been removed.	• Complies by previous NRC approval	By the response to Appendix A to Branch Technical Position APCSB 9.5-1 for Units No. 1 and 2, dated January 31, 1977, item D.3.(f) I&M stated: *"Cables used in Unit 1 were not required to pass any fire test at time of purchase. Samples of all cables were subjected to the IPCEA S-19-81 paragraph 6.19.6 vertical flame resisting test. The vertical flame test IPCEA S-19 is adequate to show the flame resistance capability of these cables since they are already in use. All cables passed this test with the exception of 600 volt, unjacketed, power cables using cross linked polyethylene insulation and one type of two conductor control cable supplied by one of the two manufacturers who supplied the cable. This cable is currently installed in Unit 1 and there are no present plans to replace the cable. Cable insulation materials were selected for their electrical properties, radiation and containment environment resistance at the time of their purchase for Unit 1. Flame resistance properties were not the only factors to consider when Unit 1 cables were-purchased."*	I&M response to Appendix A to Branch Technical Position APCSB 9.5-1 for Units No. 1 and 2, 1/31/77, item D.3.(f) NRC Safety Evaluation supporting Amendment Nos. 31 and 12 to License No. DPR-58 and DPR-74, 7/31/79, page 17. 12-EHP-2270-FPIR-001, "Fire Protection Program Impact Review", Rev. 1, All Sections ES-CABLE-0221-QCN, "Design and Installation Criteria for Cable, Trough, and Conduit", Rev. 8, All Sections

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			"All cables installed in Unit 2 were documented to have passed the vertical flame test of IPCEA S-19-81 Para. 6.19.6. Power cables used on safety systems within the containment were documented to pass the vertical flame test of IEEE 383." The NRC Safety Evaluation, dated July 31, 1979 states: *"We conclude that the administrative controls [including cable construction], fire brigade equipment and training conform to the recommendations of the National Fire Protection Association and Appendix A to Branch Technical Position 9.5-1 and are, therefore, acceptable."* The electrical cables, as approved by the SE Report, are still installed at CNP. There have been no plant modifications or other changes that would invalidate the basis for approval. Any new cable installed at CNP will be constructed similar or superior to the original cable and meeting the requirements of IEEE-383.	

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
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 by previous NRC approval	By the response to Appendix A to Branch Technical Position APCSB 9.5-1 for Units No. 1 and 2, dated January 31, 1977, item D.1.(d), I&M stated: *The auxiliary building roof at Cook Plant is reinforced concrete over metal pan (Q deck) ceiling. To prevent condensation it was necessary to add urethane foam insulation between the concrete and the metal pan. The foam selected met the UL25 flame spread requirement; however, for additional protection a layer of fire rated gypsum board was installed between the metal pan and the urethane foam. This will protect the foam from an interior building fire which could degrade the foam, liberating combustible gases which can contribute to the intensity and spread of the fire."* By response to Item D.1.(e), I&M stated: *"All roofs at the Cook Plant are of UL Class A and FM Class I construction."* The NRC Safety Evaluation, dated July 31, 1979 states: *"We conclude that the*	I&M response to Appendix A to Branch Technical Position APCSB 9.5-1 for Units No. 1 and 2, 1/31/77, item D.1.(d) and (e) NRC Safety Evaluation supporting Amendment Nos. 31 and 12 to License No. DPR-58 and DPR-74, 7/31/79, page 17. DCC-CEST-200-QCS, "Auxiliary Building Reroofing Section 07526 Modified Bitumous Sheet Roofing Seismic Class III Application", Rev. 0, All 12-EHP-2270-FPIR-001, "Fire Protection Program Impact Review", Rev. 1, All Sections

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			administrative controls [including roof construction], fire brigade equipment and training conform to the recommendations of the National Fire Protection Association and Appendix A to Branch Technical Position 9.5-1 and are, therefore, acceptable." The Auxiliary Building roof construction, as approved by the SE Report, is still installed at CNP. There have been no plant modifications or other changes that would invalidate the basis for approval. This feature remains unchanged.	

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
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 with clarification	Bulk compressed flammable gas cylinder storage is located in the Gas Bottle Storage Facility, which is separated from structures housing systems, equipment, or components important to nuclear safety. The 3-hour rated concrete wall that separates the full bottle storage area of the Gas Cylinder Storage Building is a maximum fire loss (MFL) type firewall. The combination of the firewall and spatial separation from the south wall of Fire Zones 97 and 98 provides assurance that a gas cylinder fire would not damage safety related equipment.	PMP-2270-CCM-001, "Control of Combustible Materials", Rev. 8, Section 3.10 Fire Hazards Analysis, Rev. 14 Engineering Equivalency Evaluation 11.11, "Storage of Flammable Gases in Fire Areas AA2A, AA2B, AA3, AA34, and Yard", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.3.7.1 [Bulk Flammable Gas Location Requirements]	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 with clarification • Complies with use of EEEEs	**Complies with clarification:** Bulk compressed flammable gas cylinder storage is located in the Gas Bottle Storage Facility. The 3-hour rated concrete wall that separates the full bottle storage area of the Gas Cylinder Storage Building is an MFL type firewall. The combination of the firewall and spatial separation from the south wall of Fire Zones 97 and 98 provides assurance that a gas cylinder fire would not adversely impact systems, equipment, or components important to nuclear safety. **Complies with use of EEEEs:** Hydrogen storage complies with NFPA 50A-1999 Edition, as evaluated in Engineering Equivalency Evaluation 14.1.1.	PMP-2270-CCM-001, "Control of Combustible Materials", Rev. 8, Section 3.10 Fire Hazards Analysis, Rev. 14 Engineering Equivalency Evaluation 14.1.1, "CNP Fire Protection Code Conformance Review", Rev. 0
3.3.7.2 [Bulk Flammable Gas Container Restrictions]	Outdoor high-pressure flammable gas storage containers shall be located so that the long axis is not pointed at buildings.	• Complies with use of EEEEs:	Bulk hydrogen storage is configured so the that the long axis is not pointed at buildings, as evaluated in Engineering Equivalency Evaluation 11.11.	Engineering Equivalency Evaluation 11.11, "Storage of Flammable Gases in Fire Areas AA2A, AA2B, AA3, AA34, and Yard", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.3.7.3 [Bulk Flammable Gas Cylinder Limitations]	Flammable gas storage cylinders not required for normal operation shall be isolated from the system.	• Complies	Flammable gas storage cylinders not required for normal operation are either returned to the gas bottle storage facility upon the completion of a job or are isolated from the system.	PMP-2270-CCM-001, "Control of Combustible Materials", Rev. 8, Section 3.10 12-OHP Procedure Series

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
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 • Complies by previous NRC approval • Complies with use of EEEEs	**Complies:** Per plant procedure PMP-2270-CCM-001, "Control of Combustible Materials", the following areas are designated storage for flammable/combustible liquids: • Storage of flammable liquids (NFPA Diamond Rating of 3 or 4) in quantities greater than one gallon per container shall be restricted to the U-1 Flammable Liquids Storage Room located on the 595' level of the Service Building. • Bulk storage of combustible liquids (those having a flash point above 100°F, NFPA Diamond Rating of 2 or less) will be permitted in the U-2 Miscellaneous Oil Storage Room located on the 591' level at the south end of the Turbine Building. These areas are separated from systems, equipment, and components important to nuclear safety, by 3-hour fire resistive barriers. **Complies by previous NRC approval:** By the response to Appendix A to Branch Technical Position	PMP-2270-CCM-001, "Control of Combustible Materials", Rev. 7, Section 3.9 Fire Hazards Analysis, Rev. 14 I&M response to Appendix A to Branch Technical Position APCSB 9.5-1 for Units No. 1 and 2, 1/31/77, item D.2.(a) NRC Safety Evaluation supporting Amendment Nos. 31 and 12 to License No. DPR-58 and DPR-74, 7/31/79, page 17. "NFPA 30 Code Compliance Evaluation for Donald C. Cook Nuclear Plant Unit 1 and 2", Rev. 0, 7/25/90, All "Donald C. Cook Nuclear Plant NFPA Code Deviations and Justifications", Rev. 2, 4/12/06 Engineering Equivalency Evaluation 11.16, "Lube Oil Storage Rooms Fire Zones 83 and 95 (AA2A), and 88 and 100 (AA2B) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 11.17, "Diesel Generator Fuel Oil Day Tank Rooms Fire Zones 15 (AA14), 16 (AA15), 18 (AA23) and 19 (AA24) Boundary Evaluation", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			APCSB 9.5-1 for Units No. 1 and 2, dated January 31, 1977, item D.2.(a)(1), I&M stated: *"The emergency diesel generator fuel oil day tanks are enclosed in a 3 hour rated enclosure within each of the diesel generator rooms. The enclosure has 3 hour rated walls, floor, ceiling, doors, and dampers, is equipped with thermally actuated fire detection which operates a fixed automatic CO2 fire suppression system, and also is drained to remove any oil spill."* By item D.2.(a)(1), I&M stated: *"While not safety related or an exposure hazard to safety related equipment, the turbine generator, its lube oil system, and the area surrounding it are fully fire protected. This is considered to be the highest fire potential area in a power plant.* *Area coverage by automatic sprinklers is provided 100% below the main and mezzanine floors. Oil lines below the main floor, even though covered by guard piping, are traced with automatic spray nozzles which also follow cable tray runs and cover the H2 seal oil equipment.*	

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			Lube oil processing and running oil tank rooms are 3 hour rated enclosures with automatic CO2 and sprinkler fire suppression. Oil piping above the main floor has fire detection for alarm in the control room and manual preaction water spray operable from the control room. Turbine generator bearings are protected by manual dry chemical piped systems. Portable water hose lines, foam equipment, CO2, and dry chemical wheeled and hand portable extinguishers are liberally provided. *The entire area is curbed and drained. Heat and smoke vents are provided in the turbine building roof at a 1 sq./ft. to 100 sq. ft. ratio. Three hour rated firewalls cut off each unit below the main floor, the auxiliary building, service building, screenhouse, heating boilers, as well as the lube oil, and running oil tank room."* The NRC Safety Evaluation, dated July 31, 1979 states: *"We conclude that the administrative controls [including storage of flammable and combustible liquids], fire brigade equipment and training conform*	

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			to the recommendations of the National Fire Protection Association and Appendix A to Branch Technical Position 9.5-1 and are, therefore, acceptable." The storage configurations of combustible liquids, as approved by the SE Report, are still used at CNP. There have been no plant modifications or other changes that would invalidate the basis for approval. Features remain unchanged. **Complies with use of EEEEs:** Storage of flammable and combustible liquids complies with NFPA 30-1987 Edition, as evaluated in the "NFPA 30 Code Compliance Evaluation for Donald C. Cook Nuclear Plant Unit 1 and 2". The fire barriers of the Lube Oil Storage Rooms have been evaluated in accordance with NFPA 805, section 3.11.2, and by Engineering Equivalency Evaluation 11.16. The fire barriers of the Diesel Generator Fuel Oil Day Tank Rooms have been evaluated in accordance with NFPA 805, section 3.11.2, and by Engineering Equivalency Evaluation 11.17.	

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
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	CNP environmental review documents include requirements for inspecting transformer oil collection basins and drain paths.	PMP-6090-ADM-001, "Environmental Reviews and Surveillance", Rev. 5 12-EA-6090-ENV-112, "Auxiliary Building Wastewater Management", Rev. 2, Section 4.3.6
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	CNP procedures designate storage areas for combustible materials, none of which are around hot pipes and surfaces. Also, CNP procedures require that piping be clean, well maintained and free of all clutter. Procedure PMP-2220-HSK-001 states that plant personnel responsible for area housekeeping.	PMP-2220-HSK-001, "Housekeeping and Material Condition", Rev. 6 PMP-2270-CCM-001, "Control of Combustible Materials", Rev. 8, Section 3.2.1

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.3.11 Electrical Equipment	Adequate clearance, free of combustible material, shall be maintained around energized electrical equipment.	• Complies	CNP procedures designate storage areas for combustible materials, none of which are around energized electrical equipment. Energized electrical components are maintained free from adjacent combustible material per PMP-2270-CCM-001. Procedure PMP-2220-HSK-001 states that plant personnel are responsible for area housekeeping. Environmental procedures require the clean up of all oil spills.	PMP-2270-CCM-001, "Control of Combustible Materials", Rev. 8, Section 3.2.1 and Attachment 1, Section 1.3.2 12-PPP-2270-066-012, "Transient Combustible Monitoring", Rev. 7 PMP-2220-HSK-001, "Housekeeping and Material Condition", Rev. 6 PMP-6090-ADM-001, "Environmental Reviews and Surveillance", Rev. 5 Nuclear Energy Institute (NEI) 04-02, "Guidance for Implementing a Risk-Informed, Performance-Based Fire Protection Program under 10 CFR 50.48(c)", Rev. 2 / Section K.5 (FAQ 06-0024)

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
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.	• Complies by previous NRC approval	NRC Safety Evaluation dated December 23, 1983, states: *"Each unit has four reactor coolant pumps with an oil collection system which drains to a vented closed collection tank. The quantity of lubricating oil in each pump is 265 gallons; the capacity of the oil collection tank is 275 gallons.* *The collection tank is arranged such that if a failure of more than one RCP motor lube system occurred, the oil collection tank would over-flow onto the lower containment floor. There are no ignition sources at the floor level of the lower containment.* *The RCP motor lube oil system does not comply with Section III.O because the oil collection tank is not sized to contain the entire lube oil system inventory.* *The RCP motor lube oil system is capable of withstanding the safe shutdown earthquake. The oil collection tank is provided with sufficient capacity to hold the total lube oil inventory of one reactor coolant pump with margin and is designed so that any overflow will be drained to a safe location.*	I&M Letter to NRC, "Fire Protection - Appendix R Compliance", 7/19/1982 I&M Letter to NRC, "Fire Protection - 10 CFR 50, Appendix R, Section III.O", 12/30/1982 NRC Safety Evaluation, "Donald C. Cook Nuclear Power Plant, Unit Nos. 1 and 2 Fire Protection - Request for Exemption from requirements of Appendix R to 10 CFR 50, Sections III.G and III.O", 12/23/1983 Pages 10 and 11, and enclosure 2, pages 15 and 16

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			Based on the above evaluation, the existing RCP motor lube oil collection system provides a level of safety equivalent to the technical requirements of Section III.O and, therefore, the exemption should be granted." The oil collection tank for the RCP motor lube system, as approved by the SE Report, is still used at CNP. There have been no plant modifications or other changes that would invalidate the basis for approval. This feature remains unchanged.	
3.3.12 Reactor Coolant Pumps (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.	• Complies	As stated in the FPPM, section 12.8, each RCP is provided with oil collection enclosures to capture oil from potential pressurized and unpressurized leakage sites in the lube oil system.	FPPM, Rev. 11, Section 12.8

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.3.12 Reactor Coolant Pumps (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.	• Complies by previous NRC approval	NRC Safety Evaluation dated December 23, 1983, states: *"Each unit has four reactor coolant pumps with an oil collection system which drains to a vented closed collection tank. The quantity of lubricating oil in each pump is 265 gallons; the capacity of the oil collection tank is 275 gallons.* *The collection tank is arranged such that if a failure of more than one RCP motor lube system occurred, the oil collection tank would over-flow onto the lower containment floor. There are no ignition sources at the floor level of the lower containment.* *The RCP motor lube oil system does not comply with Section III.O because the oil collection tank is not sized to contain the entire lube oil system inventory.* *The RCP motor lube oil system is capable of withstanding the safe shutdown earthquake. The oil collection tank is provided with sufficient capacity to hold the total lube oil inventory of one reactor coolant pump with margin and is designed so that any overflow will be drained to a safe location.*	I&M Letter to NRC, "Fire Protection - Appendix R Compliance", 7/19/1982 I&M Letter to NRC, "Fire Protection - 10 CFR 50, Appendix R, Section III.O", 12/30/1982 NRC Safety Evaluation, "Donald C. Cook Nuclear Power Plant, Unit Nos. 1 and 2 Fire Protection - Request for Exemption from requirements of Appendix R to 10 CFR 50, Sections III.G and III.O", 12/23/1983 Pages 10 and 11, and enclosure 2, pages 15 and 16

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			Based on the above evaluation, the existing RCP motor lube oil collection system provides a level of safety equivalent to the technical requirements of Section III.O and, therefore, the exemption should be granted." The oil collection tank for the RCP motor lube system, as approved by the SE Report, is still used at CNP. There have been no plant modifications or other changes that would invalidate the basis for approval. This feature remains unchanged.	
3.3.12 Reactor Coolant Pumps (3)	A flame arrestor is required in the vent if the flash point characteristics of the oil present the hazard of a fire flashback.	• Complies	A flame arrestor is provided in the vent.	FPPM, Rev. 11, Section 12.8 DB-12-APPR, "American Electric Power Nuclear Organization Donald C. Cook Nuclear Plant Design Basis Document for 10 CFR 50 Appendix R", Rev. 0, Section 4.4

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.3.12 Reactor Coolant Pumps (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.	• Complies	All leakage points are protected on reactor coolant pump motors.	FPPM, Rev. 11, Section 12.8 DB-12-APPR, "American Electric Power Nuclear Organization Donald C. Cook Nuclear Plant Design Basis Document for 10 CFR 50 Appendix R", Rev. 0, Section 4.4
3.3.12 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	A calculation has been performed to verify that the RCP oil collection system is sufficient to permit flow from all of the drip pans where the flow is driven by gravity and resisted by pipe friction. The calculation also verified the adequacy of the drain piping in the event that the lube oil lift pump discharges directly into its housing.	FPPM, Rev. 11, Section 12.8 Engineering and Control Procedure 1-L3-01, Calculation of Flow in RCP Oil Collection System for Unit 1, Rev. 1 WCAP-10541, Westinghouse Owners Group Report, "Reactor Coolant Pump Seal Performance Following a Loss of all AC Power", Rev. 2
3.4 Industrial Fire Brigade	Industrial Fire Brigade.	• N/A	N/A - Section Heading, see sub-sections for any specific compliance statements.	N/A
3.4.1 On-Site Fire-Fighting Capability	On-Site Fire-Fighting Capability. All of the following requirements shall apply.	• N/A	N/A - Section Heading, see sub-sections for any specific compliance statements - See NFPA 600 CCR.	Engineering Equivalency Evaluation 14.1.1, "NFPA 600 Code Conformance Review", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.4.1 On-Site Fire-Fighting Capability (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:	• Complies • Complies with clarification	**Complies:** A fully staffed, trained, and equipped fire-fighting force is available at all times to control and extinguish all fires on site. This force is required to have a minimum complement of five persons on duty and conforms with the applicable NFPA standards of this element. **Complies with clarification:** Per the "Technical Requirements Manual and Bases", "The composition of the fire brigade may be less than the minimum requirements for a period of time not to exceed 2 hours, in order to accommodate unexpected absence provided immediate action is taken to fill the required positions."	PMI-2270, "Fire Protection Program", Rev. 30, Section 4.1 PPI-2270, "Fire Brigade Staffing and Response", Rev. 4, Section 4.0 "Technical Requirements Manual and Bases", Unit 1: Rev. 1, Unit 2: Rev. 1, Section 10.1, Administrative Controls, Site Fire Brigade, Unit 1 Rev. 1, Unit 2 Rev. 1.

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.4.1 On-Site Fire-Fighting Capability (a)(1)	NFPA 600, "Standard on Industrial Fire Brigades" (interior structural fire fighting)	• Complies with use of EEEEs • Complies with clarification	**Complies with use of EEEEs:** For interior fire fighting, CNP complies with NFPA 600–2000 Edition, Chapter 5. The fire brigade has been reviewed against the requirements of NFPA 600, 2000 Edition, Chapters 2 and 5, as detailed in the CNP "Fire Protection Code Conformance Review". **Complies with clarification:** As required, and in accordance with the guidance of Section K to NEI-04-02 (FAQ 06-0007), the CNP Fire Brigade has the ability to control and extinguish exterior fires similarly to interior fires, through the development, review, and maintenance of associated fire emergency plans and fire attack plans; regular training and education; the use of appropriate protective clothing and equipment; and brigade member medical and physical performance requirements; as addressed through compliance with NFPA 600-2000 Edition, Chapters 2 and 5.	Engineering Equivalency Evaluation 14.1.1, "NFPA 600 Code Conformance Review", Rev. 0 Nuclear Energy Institute (NEI) 04-02, "Guidance for Implementing a Risk-Informed, Performance-Based Fire Protection Program under 10 CFR 50.48(c)", Rev. 2 / Section K.6 (FAQ 06-0007) PPI-2270, "Fire Brigade Staffing and Response", Rev. 4

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.4.1 On-Site Fire-Fighting Capability (a)(2)	NFPA 1500, "Standard on Fire Department Occupational Safety and Health Program"	• N/A	CNP complies with NFPA 600 and as such NFPA 1500 is not applicable to CNP per Section K.6 of NEI 04-02, which states, "The NFPA standards divide fire brigades into two types, based on organization and duties: "Industrial fire Brigades" and "Industrial Fire Departments." Practically this means that a fire fighting organization at a nuclear power plant must comply with either NFPA 600 (for an Industrial Fire Brigade) or both NFPA 1500 and NFPA 1582 (for an Industrial Fire Department)."	Nuclear Energy Institute (NEI) 04-02, "Guidance for Implementing a Risk-Informed, Performance-Based Fire Protection Program under 10 CFR 50.48(c)", Rev. 2 / Section K.6 (FAQ 06-0007)
3.4.1 On-Site Fire-Fighting Capability (a)(3)	NFPA 1582, "Standard on Medical Requirements for Fire Fighters and Information for Fire Department Physicians"	• N/A	CNP complies with NFPA 600 and as such NFPA 1582 is not applicable to CNP per Section K.6 of NEI 04-02, which states, "The NFPA standards divide fire brigades into two types, based on organization and duties: "Industrial fire Brigades" and "Industrial Fire Departments." Practically this means that a fire fighting organization at a nuclear power plant must comply with either NFPA 600 (for an Industrial Fire Brigade) or both NFPA 1500 and NFPA 1582 (for an Industrial Fire Department)."	Nuclear Energy Institute (NEI) 04-02, "Guidance for Implementing a Risk-Informed, Performance-Based Fire Protection Program under 10 CFR 50.48(c)", Rev. 2 / Section K.6 (FAQ 06-0007)

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.4.1 On-Site Fire-Fighting Capability (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.	• Complies	CNP Fire Brigade members have no other assigned normal plant duties that would prevent immediate response to a fire or other emergency as required.	PMP-2270-FRP-001, "Fire Response Plan", Rev. 11, Section 3.8.2.
3.4.1 On-Site Fire-Fighting Capability (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 criteria. *Exception to (c): Sufficient training and knowledge shall be permitted to be provided by an operations advisor dedicated to industrial fire brigade support.*	• Complies	CNP meets the exception to (c) Per PMP-2270-FRP-001, "One person from the Operations Department with a reactor operator's license or equivalent training will advise the Fire Brigade Leader on safety related/safe shutdown and general plant systems in the fire area".	PMP-2270-FRP-001, "Fire Response Plan", Rev. 11, Section 3.3.4(b)
3.4.1 On-Site Fire-Fighting Capability (d)	The industrial fire brigade shall be notified immediately upon verification of a fire.	• Complies	Per CNP procedures, the fire brigade is immediately notified in the event of a fire alarm.	PMP-2270-FRP-001, "Fire Response Plan", Rev. 11

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.4.1 On-Site Fire-Fighting Capability (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 firefighting operations. The physical examination shall determine the ability of each member to use respiratory protection equipment.	• Complies	Per TPD-600-FP, when selected for initial training, students must complete physical examination requirements as well as a physical ability test. They are also subject to the requirements of PMP-2281-RES-001. Here, formal respiratory training is required to be completed prior to the initial use of a respiratory protection device and on an annual basis thereafter. Further, the "Hazardous Material Response Organization and Training" states that all HAZMAT qualified individuals shall have had a medical assessment (baseline) and a follow-up assessment every 12 months unless the attending physician believes a longer interval (not greater than biennially) is appropriate. Procedure TPD-600-FP requires "Hazardous Materials - Technician Level Evolutions" as part of the fire brigade member training, therefore, the members of the fire brigade is HAZMAT qualified and subject to the requirements of the "Hazardous Material Response Organization and Training".	SPP-2281-HAZ-001, "Hazardous Material Response Organization and Training", Rev. 4, Section 4.3. TPD-600-FP, "Fire Protection Training Program Description", Rev. 4, Section 3.3.4 and Attachment 2. PMP-2281-RES-001, "Control and Use of Respiratory Protection Devices", Rev. 3, Section 3.6.

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.4.2 Fire Pre-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	Per Procedure PMI-2270, Fire Pre-Plans that detail all hazardous conditions in certain areas are available to the fire brigade. Refer to Fire Pre-Plans Volumes I, II, and III. These Fire Pre-Plans "describe the facility layout, access, contents, construction, hazards, hazardous materials, types and locations of fire protection systems, and other information pertinent to the formulation, planning, and execution of emergency fire response."	PMI-2270, "Fire Protection Program", Rev. 30, Section 4.6 CNP Fire Pre-Plans, Volumes I, II, and III, Revisions 9, 7, and 12 respectively

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.4.2.1 [Fire Pre-Plan Contents]	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	CNP Fire Pre-Plans contain the following information for each Fire Zone: • A graphical representation of the area depicting the fire area configuration • Combustibles: A listing of the combustibles in the fire area. • Hazards: A listing of special hazards including: Radiological, Substance (e.g., combustible/flammable gases and liquids), and Physical • Access/Egress: The primary access/egress path (and, where available, the alternate path) is described. • Ventilation System: Installed fixed supply and exhaust ventilation equipment is listed. Routing for manual ventilation of the fire area is described to route smoke products out of the area. • General Notes: The recommended extinguishing agent is listed, based on the primary combustibles in the fire area. Fire brigade training includes choosing the proper extinguishing agent for each type of combustible. Based on the actual combustibles involved, the proper extinguishing agent would be utilized during the fire event; any	CNP Fire Pre-Plans, Volumes I, II, and III, Revisions 9, 7, and 12 respectively

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			special tactics appropriate for the fire area are identified (e.g., actuation of fixed suppression systems); Additional equipment available for fighting fires in the area is identified, including fire hose stations, extinguishers and automatic extinguishing system manual release stations, floor drains, sump pumps. • Management of Plant Systems: Potentially damaged safe shutdown equipment is listed.	
3.4.2.2 [Fire Pre-Plan Updates]	Pre-fire plans shall be reviewed and updated as necessary.	• Complies	CNP procedures indicate that the Fire Pre-Plans are maintained and updated by the Fire Protection Coordinator.	PMI-2270, "Fire Protection Program", 2/2/2009, Section 4.6
3.4.2.3 [Fire Pre-Plan Locations]	Pre-fire plans shall be available in the control room and made available to the plant industrial fire brigade.	• Complies	The Fire Response Plan, PMP-2270-FRP-001 states that the PFPs are located in the control room.	PMI-2270, "Fire Protection Program", Rev. 30, Section 4.6.1 PMP-2270-FRP-001, "Fire Response Plan", Rev. 11, Section 3.8.6

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.4.2.4 [Fire Pre-Plan Coordination Needs]	Pre-fire plans shall address coordination with other plant groups during fire emergencies.	• Complies with clarification	Site procedure PMP-2270-FRP-001 is not specifically a fire pre-plan, however, it provides specific instructions for actions required from key groups at CNP supporting fire brigade/fire emergency actions. Detailed response coordination actions are specified for control room personnel and the Security Group. Any other coordination actions would be initiated by control room personnel as needed for any plant emergency.	PMP-2270-FRP-001, "Fire Response Plan", Rev. 11, Section 3.8.6 CNP Fire Pre-Plans, Volumes I, II, and III, Revisions 9, 7, and 12 respectively
3.4.3 Training and Drills	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.	• Complies	Compliance is demonstrated in the subsections to this element, below.	TPD-600-FP, "Fire Protection Training Program Description", Rev. 4
3.4.3 Training and Drills (a)	Plant Industrial Fire Brigade Training. All of the following requirements shall apply.	• Complies	CNP procedures demonstrate compliance in the subsections to this element, below.	TPD-600-FP, "Fire Protection Training Program Description", Rev. 4

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.4.3 Training and Drills (a)(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.	• Complies	CNP program description TPD-600-FP has been developed to assure appropriate CNP personnel are capable of fighting fires. This procedure is also used to plan and implement fire drills. NFPA 1500 is not applicable to CNP per Section K.6 of NEI 04-02, which states, "The NFPA standards divide fire brigades into two types, based on organization and duties: 'Industrial Fire Brigades' and 'Industrial Fire Departments.' Practically, this means that a fire fighting organization at a nuclear power plant must comply with either NFPA 600 (for an Industrial Fire Brigade) or both NFPA 1500 and NFPA 1582 (for an Industrial Fire Department)."	TPD-600-FP, "Fire Protection Training Program Description", Rev. 4 Engineering Equivalency Evaluation 14.1.1, "NFPA 600 Code Conformance Review", Rev. 0 Nuclear Energy Institute (NEI) 04-02, "Guidance for Implementing a Risk-Informed, Performance-Based Fire Protection Program under 10 CFR 50.48(c)", Rev. 2 / Section K.6 (FAQ 06-0007)
3.4.3 Training and Drills (a)(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.	• Complies	CNP program description TPD-600-FP establishes quarterly classroom training and fire drills for fire brigade members. RP-O-513019 is included as a requirement in TPD-600-FP to train the brigade on radiological fire fighting evolutions.	TPD-600-FP, "Fire Protection Training Program Description", Rev. 4 RP-O-513019, "Respond to a Fire in the Restricted Area", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.4.3 Training and Drills (a)(3)	A written program shall detail the industrial fire brigade training program.	• Complies	The CNP training program description details the fire brigade training program.	TPD-600-FP, "Fire Protection Training Program Description", Rev. 4
3.4.3 Training and Drills (a)(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.	• Complies	Records stored in accordance with CNP's Records Management procedure include but are not limited to fire brigade training and qualification records.	TPD-600-FP, "Fire Protection Training Program Description", Rev. 4, Section 3.8 TRP-2070-TAP-400-FPP, "Fire Drills", Rev. 1, Section 3.4.1.b PMP-2030-REC-001, "Records Management", Rev. 14
3.4.3 Training and Drills (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.	• Complies	CNP has a dedicated fire brigade and does not have personnel responding who are not active fire brigade members. One SRO who responds is trained with the fire brigade.	PMP-2270-FRP-001, "Fire Response Plan", Rev. 11, Section 3
3.4.3 Training and Drills (c)	Drills. All of the following requirements shall apply.	• N/A	N/A - Section Heading, see sub-sections for any specific compliance statements.	N/A

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.4.3 Training and Drills (c)(1)	Drills shall be conducted quarterly for each shift to test the response capability of the industrial fire brigade.	• Complies	Per CNP program description TPD-600-FP, at least one fire drill per quarter shall be held for each shift of the fire brigade. Further, per TRP-2070-TAP-400-FPP, one drill is required for each fire brigade shift per quarter.	TPD-600-FP, "Fire Protection Training Program Description", Rev. 4, Section 3.9.1 TRP-2070-TAP-400-FPP, "Fire Drills", Rev. 1, Section 3.2.1.b
3.4.3 Training and Drills (c)(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.	• Complies	TPD-600-FP establishes drill instructions. These drills are designed to test and challenge industrial fire brigade response. Drill procedures are also established in TRP-2070-TAP-400-FPP.	TPD-600-FP, "Fire Protection Training Program Description", Rev. 4 TRP-2070-TAP-400-FPP, "Fire Drills", Rev. 1, Section 3.3
3.4.3 Training and Drills (c)(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.	• Complies	CNP procedures indicate that the location of the drills is varied and some of the drills are conducted in safety significant areas.	TRP-2070-TAP-400-FPP, "Fire Drills", Rev. 1, Section 3.2.3.a.3

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.4.3 Training and Drills (c)(4)	Drill records shall be maintained detailing the drill scenario, industrial fire brigade member response, and ability of the industrial fire brigade to perform as a team.	• Complies	Per TRP-2070-TAP-400-FPP, drill records, which includes all data sheets listed in the table of contents, are maintained in accordance with PMP-2030-REC-001.	TRP-2070-TAP-400-FPP, "Fire Drills", Rev. 1, Section 3.4.1.b PMP-2030-REC-001, "Records Management", Rev. 14
3.4.3 Training and Drills (c)(5)	A critique shall be held and documented after each drill.	• Complies	A critique is held after each fire drill per CNP procedures TPD-600-FP and TRP-2070-TAP-400-FPP. This critique is part of Data Sheet 11 in TRP-2070-TAP-400-FPP and is maintained and documented in accordance with PMP-2030-REC-001.	TPD-600-FP, "Fire Protection Training Program Description", Rev. 4, Section 3.5.1.a.2.a(8) TRP-2070-TAP-400-FPP, "Fire Drills", Rev. 1, Data Sheet 11 and Section 3.3.4 PMP-2030-REC-001, "Records Management", Rev. 14
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	The clothing and fire fighting tools supplied are discussed in 12-FPP-2270-066-023 and 12-FPP-2270-066-005. These supplies conform to NFPA standards.	12-FPP-2270-066-023, "Inventory of Fire Brigade Personal Protective Equipment", Rev. 1 12-FPP-2270-066-005, "Fire Truck Inventory and Operability Test", Rev. 2 Engineering Equivalency Evaluation 14.1.1, "NFPA 600 Code Conformance Review", Rev. 0
3.4.5 Off-Site Fire Department Interface	Off-Site Fire Department Interface.	• N/A	N/A - Section Heading, see sub-sections for any specific compliance statements.	N/A

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
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	Offsite resources are available through local municipal paid on call and full time fire departments. Resource planning is available in the Fire Pre-Plans, Volume III. Drills are conducted at least once per year with offsite resources. Mutual aid agreements have been established with the offsite fire departments.	FPPM, Rev. 11, Section 3.14 TPD-600-FP, "Fire Protection Training Program Description", Rev. 4, Section 3.5.1.f.2 CNP Fire Pre-Plans, Volumes I, II, and III, Revisions 9, 7, and 12 respectively
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	CNP procedures state that the offsite fire departments shall be included in at least one fire drill per calendar year. In addition, formalized yearly radiation protection training is provided for the local fire department.	TPD-600-FP, "Fire Protection Training Program Description", Rev. 4, Section 3.5.1.f.2
3.4.5.3 Security and Radiation Protection	Plant security and radiation protection plans shall address off-site fire authority response.	• Complies	Per Plant Procedure TPD-600-FP, radiation protection familiarization training is provided to offsite fire departments once per year.	TPD-600-FP, "Fire Protection Training Program Description", Rev. 4, Section 3.5.1.f.3 TRP-2070-TAP-400-FPP, "Fire Drills", Rev. 1. Section 3.3.2.c. CNP Fire Pre-Plans, Volume III, Rev. 12
3.4.6 Communications	An effective emergency communications capability shall be provided for the industrial fire brigade.	• Complies	A fire and emergency radio system is provided. Details of the system design are provided in Section 12.4 of the FPPM.	FPPM, Rev. 11, Section 12.4

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.5 Water Supply	Water Supply.	• N/A	N/A - Section Heading, see sub-sections for any specific compliance statements.	N/A
3.5.1 [Water Supply Flow Code Requirements]	A fire protection water supply of adequate reliability, quantity, and duration shall be provided by one of the two following methods.	• Complies	Section Heading, see compliance bases below for compliance statements for specific subsections.	Refer to basis documentation in the sub-sections of this element.
3.5.1 [Water Supply Flow Code Requirements] (a)	Provide a fire protection water supply of not less than two separate 300,000-gal (1,135,500-L) supplies.	• Complies	The fire protection system includes two tanks nominally sized at 685,000 gallons. The normal tank water level for each tank is between 612,000 gallons and 621,000 gallons. The minimum tank water level in each tank is set at 565,000 gallons.	FPPM, Rev. 11, Section 4.1.2 OP-12-5152S, "Fire Protection Water Piping at N & S Storage Tanks Units 1 & 2", Rev. 5

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.5.1 [Water Supply Flow Code Requirements] (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.	• N/A	This section is not applicable because CNP utilizes the method allowed in subsection (a) to comply with Section 3.5.1.	N/A

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.5.2 [Water Supply Tank Code Requirements]	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 • Complies with use of EEEEs	**Complies:** The primary fire pumps can take suction from either of the tanks. The two tanks are isolated by valves so that the failure of one tank will not affect the other tank. The tanks have been designed in accordance with NFPA 22, as specified in DCC-CE-185-QCF. **Complies with use of EEEEs:** Non-listed valves are installed in some portions of the fire protection system. These valves have been evaluated to be equivalent to NFPA requirements by Engineering Equivalency Evaluation 12.24.	FPPM, Rev. 11, Section 4.1.2 OP-12-5152S, "Fire Protection Water Piping at N & S Storage Tanks Units 1 & 2", Rev. 5 DCC-CE-185-QCF, "Design, Fabrication, and Erection of the Dedicated Fire Protection Water Supply Storage Tanks", Rev. 0, Section 4.1.c.1 Engineering Equivalency Evaluation 12.24, "NFPA 24 - Listed Valve Deviation 12-ZMO-400 & 401", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.5.3 [Water Supply Pump Code Requirements]	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	CNP is provided with three fire pumps. Any two fire pumps can supply enough water to extinguish a fire on the largest demand system. I&M has committed to NFPA 20 for the installation of fire pumps at CNP. The fire pumps have been reviewed against the requirements of NFPA 20, 1990 Edition, as evaluated in CNP "NFPA Code Deviations and Justifications".	SD-DCC-FP106, "Fire Protection System - Water Supply System", Rev. 0, Section 8.6.1 Calculation No. MD-12-FIRE-008-S, Rev. 0, Section 8.1 FPPM, Rev. 11, Section 14.1 CNP "NFPA Code Deviations and Justifications", Rev. 2

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.5.4 [Water Supply Pump Diversity and Redundancy]	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	Three fire pumps, two of which are deisel enginer-driven, each of 2,500 gpm capacity are provided as the primary pumps for fire protection of both units. The water supply pumps are installed in accordance with NFPA 20, 1990 Edition, as evaluated in CNP "NFPA Code Deviations and Justifications". Any two fire pumps can supply enough water to extinguish a fire on the largest demand system.	UFSAR, Section 9.8.1, "Primary and Pegging Pumps", Items a) and b) FPPM, Rev. 11, Section 14.3.2 SD-DCC-FP106, "Fire Protection System - Water Supply System", Rev. 0, Section 8.6.1 Calculation No. MD-12-FIRE-008-S, Rev. 0, Section 8.1 CNP "NFPA Code Deviations and Justifications", Rev. 2
3.5.5 [Water Supply Pump Separation Requirements]	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 with use of EEEEs	Each fire pump and its driver and controls is provided in its own room with rated fire barriers. The fire barriers have been evaluated in accordance with NFPA 805, section 3.11.2, and by Engineering Equivalency Evaluation 11.38.	RFC-12-3065, "Installation of Dedicated Water Supply", Rev. 2 Engineering Equivalency Evaluation 11.38, "Fire Protection Pump House (Fire Area YD)", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.5.6 [Water Supply Pump Start/Stop Requirements]	Fire pumps shall be provided with automatic start and manual stop only.	• Complies	All primary pumps are arranged for (1) automatic starting by operation of pressure sensing devices, (2) remote manual start of the fire pumps from switches in either control room and (3) local starting at each pump. They cannot be shutdown until extinguishment of a fire is verified by the control room operators. Shutdown must be performed at the local fire pump control panels.	FPPM, Rev. 11, Section 4.1.2
3.5.7 [Water Supply Pump Connection Requirements]	Individual fire pump connections to the yard fire main loop shall be provided and separated with sectionalizing valves between connections.	• Complies	Fire pump connections to the yard main fire loop are provided with sectionalizing valves between connections. The three sectionalizing valves shown on the drawing are FP-636, FP-644, and FP-656. Isolating valves with post indicators or curb boxes are installed in the outdoor loop header so that the entire loop is not disabled should maintenance be required on a small section.	Plant Drawing OP-12-5152T, Rev. 10 UFSAR, Section 9.8.1, "Water Distribution", Item b)

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.5.8 [Water Supply Pressure Maintenance Limitations]	A method of automatic pressure maintenance of the fire protection water system shall be provided independent of the fire pumps.	• Complies	One 50 gpm electric motor driven pegging pump is provided and located within the fire pump house. Its sole purpose is to maintain pressure in the fire protection piping system.	UFSAR, Section 9.8.1, "Primary and Pegging Pump", Item d) OP-12-5152A, "Fire Protection - Water Piping at Pumps Unit 1 & 2", Rev. 19
3.5.9 [Water Supply Pump Operation Notification]	Means shall be provided to immediately notify the control room, or other suitable constantly attended location, of operation of fire pumps.	• Complies	Control room signals will alarm when fire pumps are operated.	FPPM, Rev. 11, Section 4.1.1 Plant Procedure 12-PPP-4030-066-006, "Three Year Fire Protection Water System Unobstructed Flow Test", Rev. 5, Attachments 1 and 2
3.5.10 [Water Supply Yard Main Code Requirements]	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 • Complies with use of EEEEs	**Complies:** An underground yard fire main loop is installed in accordance with NFPA 24. **Complies with use of EEEEs:** Non-listed valves are installed in some portion of the fire protection system. These valves have been evaluated to meet the NFPA requirements by Engineering Equivalency Evaluation 12.24.	Flow Diagram 12-5152 Series RFC-12-3065, "Installation of Dedicated Water Supply", Rev. 2 DCC-PM-108-QCS, "Installation of Underground Piping", Rev. 0 FPPM, Rev. 11, Section 14.3.2 Engineering Equivalency Evaluation 12.24, "NFPA 24 - Listed Valve Deviation 12-ZMO-400 & 401", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.5.11 [Water Supply Yard Main Maintenance Issues]	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 • Complies with use of EEEEs • Complies with clarification	**Complies:** Isolating valves with post indicators or curb boxes are installed in the fire protection header so that the entire loop is not disabled should maintenance be required on a small section. **Complies with use of EEEEs:** Approved valves are not provided at the main riser to branches of hose outlets or at each riser controlling more than two hose stations. Isolation valves are not provided for the Turbine Building hose systems risers and supplies. A review of the system design in "CNP NFPA Code Deviations and Justifications" verified that adequate isolation valves are provided for a majority of the hose risers without adversely impacting the operation of sprinklers protecting safety related equipment. Sectionalizing valves have not been provided for isolating hose station risers from the fire main loop contained within the Turbine and Screen House Buildings. The areas affected include Fire Zones 80, 84, and 142. Justifications for these deviations are found in	UFSAR, Section 9.8.1, "Water Distribution", Item b) CNP "NFPA Code Deviations and Justifications", Rev. 2 0120-164-007, "NFPA Code Deviation Evaluation D.C. Cook Units 1 and 2", Rev. 1 FPPM, Rev. 11, Table 5.1, Section E.3.(a). Flow Diagram 12-5152 series RFC-12-3003

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			Calculation No. 0120-164-007, "NFPA Code Deviation Evaluation D.C. Cook Units 1 and 2". **Complies with clarification:** A single pipe break can cause loss of primary (sprinkler) and secondary (hose station) suppression in Fire Zones 28, 30, and 32. However, a yard hydrant and/or a more remote hose station can be used to place a hose stream in service. A single pipe break can cause loss of primary (manual charcoal filter deluge system) and secondary (hose station) suppression in Fire Zones 49 and 50 at elevation 633'. However, a sectionalizing valve in the 6" auxiliary building header allows FHC 64 at elevation 633' to be available for backup. A single pipe break can cause loss of sprinkler protection as well as loss of one or more of the hose stations in Fire Zones 79, 80, 84, 85, 90, 91, and 97. However, one or more of the remaining hose stations in each zone will remain in service despite the worst case pipe break.	

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.5.12 [Water Supply Compatible Thread Connections]	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	Threads which are compatible with those used by local fire departments are provided on all hydrants, hose couplings and standpipe risers.	TRP-2070-TAP-400-FPP, "Fire Drills", Rev. 1. Section 3.3.2.c. CNP Fire Pre-Plans, Volumes I, II, and III, Revisions 9, 7, and 12 respectively

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.5.13 [Water Supply Header Options]	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 • Complies by previous NRC approval	**Complies:** Turbine and Auxiliary Building headers are double-end fed. These headers are fed from both ends and piping is CNP type A-31 or S-31. A-31 and S-31 piping is ASME SA-106 Grade B seamless carbon steel or ASME SA-134 welded plate. Each system is equipped with a shutoff valve. **Complies by previous NRC approval:** The hose stations and standpipes provided for CNP are in accordance with the requirements of BTP 9.5-1, Appendix A for plants which received a construction permit before July 1, 1976. Section E.3.(d) of Appendix A to Branch Technical Position APCSB 9.5-1 on interior manual hose stations does not contain any requirements for hose station operability in the event of an SSE. By the response to Appendix A to Branch Technical Position APCSB 9.5-1 for Units No. 1 and 2, dated January 31, 1977, item E.3.(d) I&M stated: *"All hose standpipes at Cook Plant are spaced at approximate*	12-5152 System Drawings ES-PIPE-1000-QCS, "Pipe Material Specification", Rev. 3 UFSAR, Section 9.8.1, "Water Distribution", Item d) I&M response to Appendix A to Branch Technical Position APCSB 9.5-1 for Units No. 1 and 2, item E.3.(d) NRC Safety Evaluation supporting Amendment Nos. 31 and 12 to License No. DPR-58 and DPR-74, pages 6-7 RFCs 12-2229, 12-2621, 12-2740, 12-2983

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			75 foot intervals in the turbine, office, and auxiliary buildings. Each hose station is provided with a 1-1/2-inch water spray nozzle, a minimum of 75 feet of 1-1/2-inch hose, a 1-1/2-inch angle hose valve, a spanner wrench, a backup 2-1/2-inch angle hose valve, 2-1/2 to 1-1/2-inch reducer and a 1-1/2-inch hose cap. *We are proposing to install additional hose station capability at access areas to the control room cable spreading room, the auxiliary cable vault, the switchgear room cable vault, and the containment penetration cable tunnels."* The NRC Safety Evaluation, dated July 31, 1979 states: *"The standpipe system provides water to hose stations at various locations throughout the facility. The licensees have committed to install additional hose stations and, where necessary, standpipes to satisfy the guidelines of Appendix A to BTP 9.5-1. We have reviewed the proposed additions and find them acceptable.* *We have reviewed the design criteria and the basis for the*	

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

NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			water fire protection system. In certain areas we have required additional protection systems to be installed. We find that the water fire protection system, as modified, meets the guidelines of Appendix A to Branch Technical Position APCSB 9.5-1 and applicable National Fire Protection Association standards and is, therefore, acceptable." The additional protection systems have been installed per the RFCs. The hose station and standpipe configuration, as approved by the SE Report, is still used at CNP. There have been no plant modifications or other changes that would invalidate the basis for approval. This feature remains unchanged.	
3.5.14 [Water Supply Control Valve Supervision]	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.	• N/A	N/A - Section Heading, see compliance bases below for compliance statements for specific subsections.	N/A

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.5.14 [Water Supply Control Valve Supervision] (a)	Electrical supervision with audible and visual signals in the main control room or other suitable constantly attended location.	• Complies	Per the Annunciator Plant Procedures, valve positions are inspected on a monthly basis. These procedures also confirm that valves are properly supervised during inspection.	1-OHP-4024-101, "Annunciator #101 Response: Plant Fire System", Rev. 19 1-OHP-4024-102, "Annunciator #102 Response: Miscellaneous Areas Fire System", Rev. 12 2-OHP-4024-201, "Annunciator #201 Response: Plant Fire System", Rev. 21 2-OHP-4024-202, "Annunciator #202 Response: Miscellaneous Areas Fire System", Rev. 13
3.5.14 [Water Supply Control Valve Supervision] (b)	Locking valves in their normal position. Keys shall be made available only to authorized personnel.	• N/A	N/A - The requirements of NFPA 805, Section 3.5.14 are met by the option discussed in Section 3.5.14(a).	N/A
3.5.14 [Water Supply Control Valve Supervision] (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.	• N/A	N/A - The requirements of NFPA 805, Section 3.5.14 are met by the option discussed in Section 3.5.14(a).	N/A

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.5.15 [Water Supply Hydrant Code Requirements]	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 with clarification	Fire hydrants have been provided at the recommended 250-foot approximate spacing connected to the yard loop header with two exceptions. Hydrants 1 and 14 are located 350' apart in straight line distance and 422' apart in actual travel distance. Hydrants 4 and 7 are located 320' apart in straight line distance and 406' apart in actual travel distance. This configuration is considered adequate given the strength of the water supply and the availability of sufficient hose from the hose houses in the yard. Hose house between hydrants 2 and 7 are located more than 1000 ft apart along the yard main system. However, a fire truck containing equipment equivalent to at least two hose houses is provided for the fire brigade's use. Procedure 2270-066-003 specifies the hose house inventory and confirms that all items required by NFPA 24-1984 are contained within. Procedure 12-FPP-2270-066-005 specifies that the fire truck contains the	FPPM, Rev. 11, Table 5.1, Section E.2.(g) Plant Drawing 12-5260-44, Rev. 44 Plant Procedure 12-FPP-2270-066-003, "Monthly Inventory of Fire Hydrant Cabinets", Rev. 2, Attachment 1 Plant Procedure 12-FPP-2270-066-005, "Fire Truck Inventory and Operability Test", Rev. 2, Attachment 1 NFPA 24-1984, Standard for the Installation of Private Fire Service Mains and Their Appurtenances

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			equipment equivalent to three hose houses.	
3.5.16 [Water Supply Dedicated Limits]	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.*	• Submit for NRC Approval	Per OP-12-5152 series flow diagrams and Section 4.1.2 of the FPPM, the fire protection water supply system is normally dedicated for fire protection use only. Periodically, the fire water supply system is used for non-fire related purposes, and in these cases, the fire protection water supply system is designed and maintained to deliver the combined fire and non-fire flow demands. Justification is documented in Engineering Equivalency Evaluation 11.61, and in accordance with 10CFR50.48(c)(2)(vii) is provided in Attachment L of the Transition Report.	FPPM, Rev. 11, Section 4.1.2 OP-12-5152 series Flow Diagrams Engineering Equivalency Evaluation 11.61, "Use of Fire Water for Other Than Fire-Related Purposes", Rev. 0
3.6 Standpipe and Hose Stations	Standpipe and Hose Stations.	• N/A	N/A - Section Heading, see sub-sections for any specific compliance statements	N/A

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.6.1 [Standpipe and Hose Station Code Requirements]	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 with use of EEEEs • Complies by previous NRC approval	**Complies with use of EEEEs:** Manual hose stations are located throughout the plant and are designed for either NFPA 14 Class II or Class III service. The hose stations are capable of directing an effective stream to any safety-related area of the plant. The standpipe and hose systems comply with NFPA 14, 1971, 1978, and 1986 Editions, as evaluated in the CNP NFPA 14 Code Compliance Evaluations. **Complies by previous NRC approval:** Hose stations designed for Class II service are not in direct compliance with this section. However, the standpipe system was previously found to be acceptable by the NRC. By the response to Appendix A to Branch Technical Position APCSB 9.5-1 for Units No. 1 and 2, dated January 31, 1977, item E.3.(d) I&M stated: *"All hose standpipes at Cook Plant are spaced at approximate 75 foot intervals in the turbine, office, and auxiliary buildings. Each hose station is provided with a 1-1/2-inch water spray nozzle, a minimum of 75 feet of*	UFSAR, Section 9.8.1, "Water Distribution", Item f) 0120-164-003, "NFPA 14 - Code Compliance Verification Checklist D.C. Cook Units 1 and 2", Rev. 1, All Sections 09-0120-0123, "NFPA Code Compliance Evaluation Donald C. Cook Nuclear Plant", Rev. 0 09-0120-0381, "Extended NFPA Code Compliance Evaluation for the Donald C. Cook Nuclear Plant", Rev. 1 0120-108-005, "NFPA 14 - Code Compliance Verification Checklist D.C. Cook Units 1 and 2", Rev. 0, All Sections 0120-164-007, "NFPA Code Evaluation Deviation Evaluation D.C. Cook Units 1 and 2", Rev. 1 CNP "NFPA Code Deviations and Justifications", Rev. 2 I&M response to Appendix A to Branch Technical Position APCSB 9.5-1 for Units No. 1 and 2, 1/31/77, item E.3.(d) NRC Safety Evaluation supporting Amendment Nos. 31 and 12 to License No. DPR-58 and DPR-74,

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			1-1/2-inch hose, a 1-1/2-inch angle hose valve, a spanner wrench, a backup 2-1/2-inch angle hose valve, 2-1/2 to 1-1/2-inch reducer and a 1-1/2-inch hose cap. *We are proposing to install additional hose station capability at access areas to the control room cable spreading room, the auxiliary cable vault, the switchgear room cable vault, and the containment penetration cable tunnels."* The NRC Safety Evaluation, dated July 31, 1979 states: *"The standpipe system provides water to hose stations at various locations throughout the facility. The licensees have committed to install additional hose stations and, where necessary, standpipes to satisfy the guidelines of Appendix A to BTP 9.5-1. We have reviewed the proposed additions and find them acceptable.* *We have reviewed the design criteria and the basis for the water fire protection system. In certain areas we have required additional protection systems to be installed. We find that the water fire protection system, as*	7/31/79, pages 6-7 RFCs 12-2229, 12-2621, 12-2740, 12-2983

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			modified, meets the guidelines of Appendix A to Branch Technical Position APCSB 9.5-1 and applicable National Fire Protection Association standards and is, therefore, acceptable." The additional protection systems have been installed per the RFCs. The hose station and standpipe configuration, as approved by the SE Report, is still used at CNP. There have been no plant modifications or other changes that would invalidate the basis for approval. This feature remains unchanged.	
3.6.2 [Standpipe and Hose Station Capability Limitations]	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 with use of EEEEs	Hydraulic calculations have been performed to provide verification of the ability of the existing standpipe system to deliver adequate flow for all hose stations to supply water for fighting fires in accordance with the guidance of NFPA 14.	CNP "NFPA Code Deviations and Justifications", Rev. 2 Calculation No. MD-12-FIRE-008-S, Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.6.3 [Standpipe and Hose Station Nozzle Restrictions]	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 with clarification	The appropriate type of hose nozzle is provided to each power block area. All hose nozzles have shutoff capability and are able to control water flow from full open to full closed.	12-FPP-4030-066-023, "Test and Inspection of the Plant Fire Hose Standpipe Stations", Rev. 4, All Sections

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.6.4 [Standpipe and Hose Station Earthquake Provisions]	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 SSE.	• Complies by previous NRC approval	By the response to Appendix A to Branch Technical Position APCSB 9.5-1 for Units No. 1 and 2, dated January 31, 1977, item E.3.(d) I&M stated: "*All hose standpipes at Cook Plant are spaced at approximate 75 foot intervals in the turbine, office, and auxiliary buildings. Each hose station is provided with a 1-1/2-inch water spray nozzle, a minimum of 75 feet of 1-1/2-inch hose, a 1-1/2-inch angle hose valve, a spanner wrench, a backup 2-1/2-inch angle hose valve, 2-1/2 to 1-1/2-inch reducer and a 1-1/2-inch hose cap.* *We are proposing to install additional hose station capability at access areas to the control room cable spreading room, the auxiliary cable vault, the switchgear room cable vault, and the containment penetration cable tunnels.*" The NRC Safety Evaluation, dated July 31, 1979 states: "*The standpipe system provides water to hose stations at various locations throughout the facility. The licensees have committed to install additional hose stations and, where necessary,*	I&M response to Appendix A to Branch Technical Position APCSB 9.5-1 for Units No. 1 and 2, 1/31/77, item E.3.(d) NRC Safety Evaluation supporting Amendment Nos. 31 and 12 to License No. DPR-58 and DPR-74, 7/31/79, pages 6-7 RFCs 12-2229, 12-2621, 12-2740, 12-2983

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			standpipes to satisfy the guidelines of Appendix A to BTP 9.5-1. We have reviewed the proposed additions and find them acceptable. *We have reviewed the design criteria and the basis for the water fire protection system. In certain areas we have required additional protection systems to be installed. We find that the water fire protection system, as modified, meets the guidelines of Appendix A to Branch Technical Position APCSB 9.5-1 and applicable National Fire Protection Association standards and is, therefore, acceptable."* The additional hose station capability has been installed per the RFCs. The hose station and standpipe configuration, as approved by the SE Report, is still used at CNP. There have been no plant modifications or other changes that would invalidate the basis for approval. This feature remains unchanged.	

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.6.5 [Standpipe and Hose Station Seismic Connection Limitations]	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.	• N/A	Hose stations are not cross-connected to non-fire protection water supply systems.	OP-12-5152 Series Flow Diagrams FPPM, Rev. 11, Section 4.1.2
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 • Complies with use of EEEEs	**Complies with clarification:** I&M has committed CNP to comply with NFPA 10, 1984 edition, for portable fire extinguishers. Fire extinguishers are not provided inside containment due to radiological reasons, however, water mist fire extinguishers have been made available outside of containment for use inside containment. **Complies with use of EEEEs:** The fire extinguishers comply with the requirements of NFPA 10, 1984 Edition, as evaluated in CNP NFPA 10 Code Compliance Evaluations.	FPPM, Rev. 11, Section 14.1 09-0120-0123, "NFPA Code Compliance Evaluation Donald C. Cook Nuclear Plant", Rev. 0, 5/16/1988 0120-108-001, "NFPA 10 Code Compliance Verification Checklist", Rev. 0, 5/15/1988 09-0120-0381, "Extended NFPA Code Compliance Evaluation for the Donald C. Cook Nuclear Plant", Rev. 1, 1/14/1991 0120-164-001, "NFPA 10 Code Compliance Verification Checklist", Rev. 1, 1/14/1991 "Donald C. Cook Nuclear Plant NFPA Code Deviations and Justifications", Rev. 2, 4/12/06 UFSAR, Section 9.8.1, "Inside Plant Portable Equipment", Items b) and c)

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.8 Fire Alarm and Detection systems	Fire Alarm and Detection Systems.	• N/A	N/A - Section Heading, see sub-sections for any specific compliance statements.	N/A

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
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:	• Complies with use of EEEEs	Per the FPPM, I&M has committed CNP to comply with NFPA 72D and NFPA 72E for the installation of fire alarm initiating devices. CNP complies with NFPA 72 as evaluated in the CNP NFPA 72D and NFPA 72E Code Compliance Evaluations. Refer to I&M "NFPA Deviations and Recommendations" for NFPA 72D-1967 and NFPA 72E-1974 deviations and justifications. Per the UFSAR, "Fire protection functions are displayed on a comprehensive annunciator panel in the control rooms to alert the operator in case of fire, primary fire pump operation, or fire system malfunction. Pressure gauges on the panel also tell the operator the pressure conditions in the fire protection water piping headers."	FPPM, Rev. 11, Section 14.1 UFSAR, Rev. 20, "Fire Protection System", Section 9.8.1, "Miscellaneous Protective Features", Item g CNP "NFPA Code Deviations and Justifications", Rev. 2 Engineering Equivalency Evaluation 11.41, "Raised Floors in Control Rooms", Rev. 0 09-0120-0123, "NFPA Code Compliance Evaluation Donald C. Cook Nuclear Plant", Rev. 0, 5/16/1988 0120-164-005, "NFPA 72D Code Compliance Verification Checklist", Rev. 0, 5/16/88 0120-164-006, "NFPA 72E Code Compliance Verification Checklist", Rev. 0, 5/16/88 09-0120-0381, "Extended NFPA Code Compliance Evaluation for the Donald C. Cook Nuclear Plant", Rev. 1, 1/14/1991 0120-164-005, "NFPA 72D Code Compliance Verification Checklist - Extended", Rev. 0, 12/14/90 0120-164-006, "NFPA 72E Code

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
				Compliance Verification Checklist - Extended", Rev. 0, 12/14/90.
3.8.1 Fire Alarm (1)	Actuation of any fire detection device	• Complies	Automatic detection actuation signals are transmitted to the control room. Per the FPPM, automatic fire alarm systems are actuated by detectors that sense fire conditions. Fire alarm detection devices generally transmit signals to the local fire alarm panels and then to the control room annunciators, or, they transmit signals directly to the control room annunciators. All CNP fire detection system alarms sound and are visually displayed on the emergency fire panel in the respective control room.	FPPM, Rev. 11, Section 4.1.1 1-OHP-4024-101, "Annunciator #101 Response: Plant Fire System", Rev. 19 1-OHP-4024-102, "Annunciator #102 Response: Miscellaneous Areas Fire System", Rev. 12 2-OHP-4024-201, "Annunciator #201 Response: Plant Fire System", Rev. 21 2-OHP-4024-202, "Annunciator #202 Response: Miscellaneous Areas Fire System", Rev. 13

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.8.1 Fire Alarm (2)	Actuation of any fixed fire suppression system	• Complies	The fire suppression system alarm signaling capabilities that may be used involve automatic sprinkler waterflow, CO_2 system monitoring and Halon system monitoring. These systems alarm in the control room upon actuation per the FPPM. All CNP water-using systems; sprinklers, deluge, and standpipes, are instrumented to provide flow indication and to provide audible and visual annunciation in the respective control rooms.	FPPM, Rev. 11, Section 4.1.1 UFSAR, Rev. 20, "Fire Protection System", Section 9.8.1. 1-OHP-4024-101, "Annunciator #101 Response: Plant Fire System", Rev. 19 1-OHP-4024-102, "Annunciator #102 Response: Miscellaneous Areas Fire System", Rev. 12 2-OHP-4024-201, "Annunciator #201 Response: Plant Fire System", Rev. 21 2-OHP-4024-202, "Annunciator #202 Response: Miscellaneous Areas Fire System", Rev. 13

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.8.1 Fire Alarm (3)	Actuation of any manual fire alarm station	• Complies	Automatic fire alarm systems are actuated through manual pull stations. The systems alarm in the control room upon actuation.	FPPM, Rev. 11, Section 4.1.1 UFSAR, Rev. 20, "Fire Protection System", Section 9.8.1. 1-OHP-4024-101, "Annunciator #101 Response: Plant Fire System", Rev. 19 1-OHP-4024-102, "Annunciator #102 Response: Miscellaneous Areas Fire System", Rev. 12 2-OHP-4024-201, "Annunciator #201 Response: Plant Fire System", Rev. 21 2-OHP-4024-202, "Annunciator #202 Response: Miscellaneous Areas Fire System", Rev. 13

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.8.1 Fire Alarm (4)	Starting of any fire pump	• Complies	Per the FPPM, the fire suppression system alarm signaling capabilities include fire pump monitoring. The signals are monitored in the control room. Per the UFSAR, fire protection functions are displayed on a comprehensive annunciator panel in the control rooms to alert the operator in case of fire, primary fire pump operation or fire system malfunction.	FPPM, Rev. 11, Section 4.1.1 UFSAR, Rev. 20, "Fire Protection System", Section 9.8.1. 1-OHP-4024-101, "Annunciator #101 Response: Plant Fire System", Rev. 19 1-OHP-4024-102, "Annunciator #102 Response: Miscellaneous Areas Fire System", Rev. 12 2-OHP-4024-201, "Annunciator #201 Response: Plant Fire System", Rev. 21 2-OHP-4024-202, "Annunciator #202 Response: Miscellaneous Areas Fire System", Rev. 13

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.8.1 Fire Alarm (5)	Actuation of any fire protection supervisory device	• Complies • Complies by previous NRC approval	**Complies:** The fire suppression system alarm signaling capabilities include supervisory alarms. **Complies by previous NRC approval:** Per letter by I&M to NRC dated December 2, 1991: *"There actually are more than two circuits that are not electronically supervised. These include some water flow, sprinkler alarms, fire detection, and suppression actuation/initiating systems that are not electronically supervised in accordance with NFPA 72D. Justifications for each are outlined in Attachment 3 to this letter."* The NRC Safety Evaluation dated 1/24/95, Section 3.0 states: *"Based on the regular testing to confirm operability, the daily monitoring of the alarm panels, the fact the circuits have not experienced integrity problems, and the circuits only provide secondary annunciation of local fire alarms in the control room, the staff finds these additional unsupervised circuits acceptable."*	FPPM, Rev. 11, Section 4.1.1 1-OHP-4024-101, "Annunciator #101 Response: Plant Fire System", Rev. 19 1-OHP-4024-102, "Annunciator #102 Response: Miscellaneous Areas Fire System", Rev. 12 2-OHP-4024-201, "Annunciator #201 Response: Plant Fire System", Rev. 21 2-OHP-4024-202, "Annunciator #202 Response: Miscellaneous Areas Fire System", Rev. 13 NRC Safety Evaluation, "Donald C. Cook Nuclear Plant, Unit Nos. 1 and 2 - NFPA Code Review and Related Appendix R SER Clarifications (TAC Nos. M82265 AND M82266)", 1/24/95, Section 3.0 Letter from I&M (Fitzpatrick) to the NRC (Murley), "NFPA Code Review and Related Appendix R SER Clarifications" dated 12/2/91, Body of letter and Attachment 3

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			The unsupervised circuits, as approved by the SE Report, are still used at CNP. There have been no plant modifications or other changes that would invalidate the basis for approval. This approved justification for the unsupervised circuits remains unchanged.	
3.8.1 Fire Alarm (6)	Indication of alarm system trouble condition	• Complies	The emergency fire panel provides annunciation in the associated control room in the event of a trouble signal.	1-OHP-4024-101, "Annunciator #101 Response: Plant Fire System", Rev. 19 1-OHP-4024-102, "Annunciator #102 Response: Miscellaneous Areas Fire System", Rev. 12 2-OHP-4024-201, "Annunciator #201 Response: Plant Fire System", Rev. 21 2-OHP-4024-202, "Annunciator #202 Response: Miscellaneous Areas Fire System", Rev. 13

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.8.1.1 [Fire Alarm Communications Requirements]	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	Per Plant Procedure PMP-2270-FRP-001, personnel observing a fire or explosion at any location in the plant are able to communicate quickly with the control room by telephone, PA system, or radio. Per the UFSAR, "The plant is provided with a telephone system, independent of the public address system. The receivers are located in the offices, control rooms and most of the paging stations throughout the plant."	PMP-2270-FRP-001, "Fire Response Plan", Rev. 11, Section 3.1.1.b UFSAR, "Plant Communications", Rev. 20.1, Section 7.7.5,
3.8.1.2 [Fire Alarm Prompt Notification Limits]	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:	• N/A	N/A - Section Heading, see sub-sections for any specific compliance statements.	N/A

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.8.1.2 [Fire Alarm Prompt Notification Limits] (1)	General site population in all occupied areas	• Complies	Per the FPPM, "Plant wide fire sirens can be activated by the control room after a fire condition is confirmed." Per the UFSAR, "The plant fire horn alarm system, consisting of motor-operated horns, is provided throughout the plant to alert personnel of a fire. These horns are distinctly different in sound from the evacuation siren system."	FPPM, Rev. 11, Table 5.1, Section E.1.(b) UFSAR, Rev. 20, "Fire Protection System", "Miscellaneous Protective Features", Section 9.8.1, Item f
3.8.1.2 [Fire Alarm Prompt Notification Limits] (2)	Members of the industrial fire brigade and other groups supporting fire emergency response	• Complies	Per Plant Procedure PMP-2270-FRP-001, the fire brigade is immediately notified during a fire or other emergency. Fire brigade notification of a fire is provided by a site announcement over the Plant Public Address System and through personal electronic pagers. Per the UFSAR, "Manual operation of the plant-wide system is done from the control rooms by the plant operators to signal the plant fire brigade once a fire has been verified."	PMP-2270-FRP-001, "Fire Response Plan", Rev. 11, Section 3.4 and Section 3.7.1 UFSAR, Rev. 20, "Fire Protection System", "Miscellaneous Protective Features", Section 9.8.1, Item f

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.8.1.2 [Fire Alarm Prompt Notification Limits] (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	Per PMP-2270-FRP-001, when requested, the security department will contact the Berrien County Dispatch Center by calling the offsite emergency number, 911. Per the Fire Pre-Plans, Volume III, Radio communications shall be established between Bridgman and Lake Township Fire Departments and the CNP Fire Brigade Leader immediately upon manning fire stations. Portable radios equipped with CNP Fire Brigade frequencies have been provided to the Lake Township and Bridgman Fire Departments. The CNP Fire Brigade has access to an 800 MHz radio to allow for communications with Berrien County Emergency Response Agencies.	PMP-2270-FRP-001, "Fire Response Plan", Rev. 11, Section 3.2 and Section 3.7.1 CNP Fire Pre-Plans, Volume III, Rev. 12, Section 3

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
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 with use of EEEEs	Automatic fire detection systems credited to meet the requirements of NFPA 805 Chapter 4 are identified in the individual Fire Safety Analysis Reports. Per the FPPM, I&M has committed CNP to comply with NFPA 72D and NFPA 72E for the installation of fire alarm initiating devices. CNP complies with NFPA 72 as evaluated in the CNP NFPA 72D and NFPA 72E Code Compliance Evaluations. Refer to I&M "NFPA Deviations and Recommendations" for NFPA 72D-1967 and NFPA 72E-1974 deviations and justifications.	CNP Fire Safety Analysis Reports FPPM, Rev. 11, Section 14.1 CNP NFPA Code Deviations and Justifications, Rev. 2 09-0120-0123, "NFPA Code Compliance Evaluation Donald C. Cook Nuclear Plant", Rev. 0 0120-164-005, "NFPA 72D Code Compliance Verification Checklist", Rev. 0 0120-164-006, "NFPA 72E Code Compliance Verification Checklist", Rev. 0 09-0120-0381, "Extended NFPA Code Compliance Evaluation for the Donald C. Cook Nuclear Plant", Rev. 1 0120-164-005, "NFPA 72D Code Compliance Verification Checklist - Extended", Rev. 0 0120-164-006, "NFPA 72E Code Compliance Verification Checklist - Extended", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.9 Automatic and Manual Water-Based Fire Suppression Systems	Automatic and Manual Water-Based Fire Suppression Systems.	• N/A	N/A - Section Heading, see sub-sections for any specific compliance statements.	N/A
3.9.1 [Fire Suppression System Code Requirements]	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:	• N/A	N/A - Section Heading, see compliance bases below for compliance statements for specific subsections.	N/A

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.9.1 [Fire Suppression System Code Requirements] (1)	(1) NFPA 13, "Standard for the Installation of Sprinkler Systems"	• Complies with use of EEEEs	Suppression systems credited to meet the requirements of NFPA 805 Chapter 4 are identified in the individual Fire Safety Analysis Reports. The sprinkler systems comply with the requirements of NFPA 13, 1971 and 1983 editions, as evaluated in the CNP NFPA 13 Code Compliance Evaluations.	CNP Fire Safety Analysis Reports FPPM, Rev. 11, Section 14.1 09-0120-0381, "Extended NFPA Code Compliance Evaluation for the Donald C. Cook Nuclear Plant", Rev. 1 09-0120-0123, "NFPA Code Compliance Evaluation Donald C. Cook Nuclear Plant", Rev. 0 0120-108-004, "NFPA 13 - Code Compliance Verification Checklist D.C. Cook Units 1 & 2", Rev. 0 0120-164-002, "NFPA 13 - Code Compliance Verification Checklist D.C. Cook Units 1 & 2", Rev. 1 0120-164-007, "NFPA Code Evaluation Deviation Evaluation D.C. Cook Units 1 and 2", Rev. 1 CNP "NFPA Code Deviations and Justifications", Rev. 2 Engineering Equivalency Evaluation 11.41, "Unit 1 Fire Zone 53 (AA46) and Unit 2 Fire Zone 54 (AA47) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 12.20, "Unit 1 Turbine Oil Tank Room Fire Zone 95 (AA2A)", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
				Engineering Equivalency Evaluation 12.22, "Units 1 & 2 Auxiliary Building North and South Elevations 609' Fire Zones 44N (AA36) and 44S (AA42) Analysis of Sprinkler System", Rev. 0 Engineering Equivalency Evaluation N, "Partial Detection and Suppression Systems for Fire Zone 26 (AA30)", Rev. 0 Engineering Equivalency Evaluation O, "Partial Detection and Suppression Systems for Fire Zone 11 (AA10)", Rev. 0 Engineering Equivalency Evaluation P, "Partial Detection and Suppression for Fire Zone 23 (AA29)", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.9.1 [Fire Suppression System Code Requirements] (2)	(2) NFPA 15, "Standard for Water Spray Fixed Systems for Fire Protection"	• Complies with use of EEEEs	Suppression systems credited to meet the requirements of NFPA 805 Chapter 4 are identified in the individual Fire Safety Analysis Reports. CNP complies with NFPA 15, 1973 edition, as evaluated in the CNP NFPA 15 Code Compliance Evaluations.	CNP Fire Safety Analysis Reports FPPM, Rev. 11, Section 14.1 09-0120-0381, "Extended NFPA Code Compliance Evaluation for the Donald C. Cook Nuclear Plant", Rev. 1 09-0120-0123, "NFPA Code Compliance Evaluation Donald C. Cook Nuclear Plant", Rev. 0 0120-108-1375, "NFPA 15 - Code Compliance Verification Checklist D.C. Cook Units 1 & 2", Rev. 0 0120-164-004, "NFPA 15 - Code Compliance Verification Checklist D.C. Cook Units 1 & 2", Rev. 1 0120-164-007, "NFPA Code Evaluation Deviation Evaluation D.C. Cook Units 1 and 2", Rev. 1 CNP "NFPA Code Deviations and Justifications", Rev. 2 Engineering Equivalency Evaluation 11.41, "Unit 1 Fire Zone 53 (AA46) and Unit 2 Fire Zone 54 (AA47) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 12.20, "Unit 1 Turbine Oil Tank Room Fire Zone 95 (AA2A)", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
				Engineering Equivalency Evaluation 12.22, "Units 1 & 2 Auxiliary Building North and South Elevations 609' Fire Zones 44N (AA36) and 44S (AA42) Analysis of Sprinkler System", Rev. 0
3.9.1 [Fire Suppression System Code Requirements] (3)	(3) NFPA 750, "Standard on Water Mist Fire Protection Systems"	• N/A	Water mist systems are not installed at Cook Nuclear Plant.	Fire Hazards Analysis, Rev. 14
3.9.1 [Fire Suppression System Code Requirements] (4)	(4) NFPA 16, "Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems"	• N/A	Foam-water and foam-water spray systems are not installed at Cook Nuclear Plant.	Fire Hazards Analysis, Rev. 14

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.9.2 [Fire Suppression System Flow Alarm]	Each system shall be equipped with a water flow alarm.	• Complies • Complies with use of EEEEs	**Complies:** Fire protection functions are displayed on a comprehensive annunciator panel in the control rooms to alert the operator in case of fire, primary fire pump operation, sprinkler waterflow supervisory alarms, or fire system malfunction. Pressure gauges on the panel also tell the operator the pressure conditions in the fire protection water piping headers. **Complies with use of EEEEs:** Refer to CNP "NFPA Code Deviations and Justifications" for NFPA 72D-1967 and NFPA 14-1971 for justifications to deviations related to this requirement.	FPPM, Rev. 11, Section 4.1.1 UFSAR, Section 9.8.1, "Miscellaneous Protective Features", Item g) 1-OHP-4024-101, "Annunciator #101 Response: Plant Fire System", Rev. 19 2-OHP-4024-201, "Annunciator #201 Response: Plant Fire System", Rev. 21 CNP "NFPA Code Deviations and Justifications", Rev. 2

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.9.3 [Fire Suppression system Alarm Locations]	All alarms from fire suppression systems shall annunciate in the control room or other suitable constantly attended location.	• Complies • Complies with use of EEEEs	**Complies:** Fire protection functions are displayed on a comprehensive annunciator panel in the control rooms to alert the operator in case of fire, primary fire pump operation, sprinkler waterflow supervisory alarms, or fire system malfunction. Pressure gauges on the panel also tell the operator the pressure conditions in the fire protection water piping headers. **Complies with use of EEEEs:** Refer to CNP "NFPA Code Deviations and Justifications" for NFPA 72D-1967 and NFPA 14-1971 for justifications to deviations related to this requirement.	UFSAR, Section 9.8.1, "Miscellaneous Protective Features", Item g) FPPM, Rev. 11, Section 4.1.1 1-OHP-4024-101, "Annunciator #101 Response: Plant Fire System", Rev. 19 1-OHP-4024-102, "Annunciator #102 Response: Miscellaneous Areas Fire System", Rev. 12 2-OHP-4024-201, "Annunciator #201 Response: Plant Fire System", Rev. 21 2-OHP-4024-202, "Annunciator #202 Response: Miscellaneous Areas Fire System", Rev. 13 CNP "NFPA Code Deviations and Justifications", Rev. 2
3.9.4 [Fire Suppression System Diesel Pump Sprinkler Protection]	Diesel-driven fire pumps shall be protected by automatic sprinklers.	• Complies	The fire pump house structure is protected by a dry pilot preaction sprinkler system. Sprinklers are provided in each primary fire pump room.	UFSAR, Section 9.8.1, "Fire Pump House Structure"

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.9.5 [Fire Suppression System Shutoff Controls]	Each system shall be equipped with an OS&Y gate valve or other approved shutoff valve.	• Complies • Complies with use of EEEEs	**Complies:** All sprinkler systems are equipped with isolation valves. **Complies with use of EEEEs:** Non-listed valves are installed in some portion of the fire protection system. These valves have been evaluated to meet the intent of the NFPA requirements by Engineering Equivalency Evaluation 12.26.	Flow Diagrams 5152 Series UFSAR, Section 9.8.1, "Water Distribution", Item d) Engineering Equivalency Evaluation 12.24, "NFPA 24 - Listed Valve Deviation 12-ZMO-400 & 401", Rev. 0
3.9.6 [Fire Suppression System Valve Supervision]	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 with clarification	Valves are supervised as required. Valve positions are inspected on a monthly basis.	Plant Procedure 12-PPP-4030-066-011, "Fire Protection Valve Lineup Verification", Rev. 3, Section 1.4 1-OHP-4024-101, "Annunciator #101 Response: Plant Fire System", Rev. 19 1-OHP-4024-102, "Annunciator #102 Response: Miscellaneous Areas Fire System", Rev. 12 2-OHP-4024-201, "Annunciator #201 Response: Plant Fire System", Rev. 21 2-OHP-4024-202, "Annunciator #202 Response: Miscellaneous Areas Fire System", Rev. 13

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.10 Gaseous Fire Suppression Systems	Gaseous Fire Suppression Systems.	• N/A	N/A - Section Heading, see sub-sections for any specific compliance statements.	N/A
3.10.1 [Gaseous Suppression System Code Requirements]	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:	• Complies	Gaseous fire suppression systems credited to meet the requirements of NFPA 805 Chapter 4 are identified in the individual Fire Safety Analysis Reports. These systems are designed and installed in accordance with the applicable NFPA codes, as reviewed in the sub-sections of this element.	CNP Fire Safety Analysis Reports

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.10.1 [Gaseous Suppression System Code Requirements] (1)	NFPA 12, "Standard on Carbon Dioxide Extinguishing Systems"	• Complies with use of EEEEs	CO2 extinguishing systems credited to meet the requirements of NFPA 805 Chapter 4 comply with NFPA 12-1968, as evaluated in CNP NFPA Code Compliance Evaluations, and Engineering Equivalency Evaluations.	FPPM, Rev. 11, Section 14.1 09-0120-0123, "NFPA Code Compliance Evaluation Donald C. Cook Nuclear Plant", Rev. 0 0120-108-002, "NFPA 12 Code Compliance Verification Checklist", Rev. 0 "Donald C. Cook Nuclear Plant NFPA Code Deviations and Justifications", Rev. 2 Engineering Equivalency Evaluation 12.19, "CO2 Fire Suppression Systems in Fire Zones Containing Concentrations of Cable Insulation (Fire Areas AA7, AA8, AA9, AA10, AA29, AA30, AA31, AA37, AA38, AA39, AA40 AA41, AA43, AA44, AA45, AA48, AA49, AA50, AA51, AA52 and AA53)", Rev. 0 Engineering Equivalency Evaluation 12.21, "Analysis of Fire Zones 13, 21, 57, 58, and 59 Lack of CO2 Suppression System Calculations", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.10.1 [Gaseous Suppression System Code Requirements] (2)	NFPA 12A, "Standard on Halon 1301 Fire Extinguishing Systems"	• Complies with use of Existing Engineering Equivalency Evaluations (EEEEs)	Halon 1301 Fire Extinguishing Systems credited to meet the requirements of NFPA 805 Chapter 4 comply with NFPA 12A-1977, as evaluated in CNP NFPA Code Compliance Evaluations and Engineering Equivalency Evaluations.	Fire Protection Program Manual (FPPM), Rev. 11, 9/2/2009, Section 14.1 09-0120-0123, "NFPA Code Compliance Evaluation Donald C. Cook Nuclear Plant", Rev. 0, 5/16/1988 0120-108-003,"NFPA 12A Code Compliance Verification Checklist", Rev. 0, 5/14/1988 "Donald C. Cook Nuclear Plant NFPA Code Deviations and Justifications", Rev. 2, 4/12/06 Engineering Equivalency Evaluation 12.23, "Analysis of Fire Zones 57 and 58 Lack of Halon Suppression System Calculations", Rev. 0
3.10.1 [Gaseous Suppression System Code Requirements] (3)	NFPA 2001, "Standard on Clean Agent Fire Extinguishing Systems"	• N/A	There are no clean agent fire extinguishing systems required to meet the performance or deterministic requirements of Chapter 4.	N/A

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.10.2 [Gaseous Suppression System Alarm Location]	Operation of gaseous fire suppression systems shall annunciate and alarm in the control room or other constantly attended location identified.	• Complies	Operation of all gaseous fire suppression systems annunciate and alarm in the control room.	UFSAR, Section 9.8.1, "Miscellaneous Protection Features", Item g) SD-12-COAUX-100, "System Description for Low Pressure Carbon Dioxide Fire Fighting System" Rev 1, Section 6.1 and 6.2 SD-12-HALON-100, "System Description Fire Protection - Halon Systems", Rev. 0, 7/15/1996 1-OHP-4024-101, "Annunciator #101 Response: Plant Fire System", Rev. 19 1-OHP-4024-102, "Annunciator #102 Response: Miscellaneous Areas Fire System", Rev. 12 2-OHP-4024-201, "Annunciator #201 Response: Plant Fire System", Rev. 21 2-OHP-4024-202, "Annunciator #202 Response: Miscellaneous Areas Fire System", Rev. 13

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.10.3 [Gaseous Suppression System Ventilation Limitations]	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.	• Complies with clarification	Per Section E.5.(d) of FPPM Design Basis Table 5.1, the Cardox (Cheme-tron) design calculations and pre-op tests have confirmed that offsetting requirements to prevent over-pressurization are satisfied. Per Section 9.8.1 of the UFSAR, "Many of the plant ventilating fans are arranged so that they may be shutdown on actuation of an automatic fire system to prevent spread of fire or smoke or, in the case of CO2 or Halon-protected areas, to retain an extinguishing concentration of the fire fighting agent." Fire areas and fire zones that are protected by CO2 systems have boundary penetrations (i.e., dampers, seismic gaps and openings around cables, conduits and pipes) sealed to ensure retention of the CO2 concentrations. In some fire areas, however, dampers have not been provided for duct work that communicates directly with the plant exterior or that pass through other areas within rated construction boundaries to the plant exterior. For the CO2 systems in these fire areas, concentration tests have been performed that demonstrate that	FPPM, Rev. 11, Section Table 5.1, Section E.5.(d) Fire Hazards Analysis, Rev. 14, Section 3.4.3 and 3.4.4 UFSAR, Section 9.8.1, "Miscellaneous Protective Features", item d) FL-15771, Cardox Design Calculations "Low Pressure Carbon Dioxide Flow Calculations" SD-12-HALON-100, "System Description Fire Protection - Halon Systems", Rev. 0, 7/15/1996

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			the required concentration levels can be maintained without dampers. The affected fire zones in which this situation exists are 40A, 40B, 42A, 45, 46A, 47A and 47B.	
3.10.4 [Gaseous Suppression System Single Failure Limits]	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	Not Applicable. CNP does not have any areas required to be protected by both primary and backup gaseous fire suppression systems.	None
3.10.5 [Gaseous Suppression System Disarming Controls]	Provisions for locally disarming automatic gaseous suppression systems shall be secured and under strict administrative control.	• Complies	Plant documents ensure that disarming automatic gaseous systems is secured and under strict administrative control.	FPPM, Rev. 11 SD-12-COAUX-100, "System Description for Low Pressure Carbon Dioxide Fire Fighting System" Rev 1, Section 9.2 SD-12-HALON-100, "Fire Protection - Halon Systems", Rev. 0, 7/15/1996
3.10.6 [Gaseous Suppression System CO2 Limitations]	Total flooding carbon dioxide systems shall not be used in normally occupied areas.	• Complies with clarification	The normally occupied areas of the plant are considered to be the general floor areas of the auxiliary and turbine buildings, as well as the control rooms. Total flooding CO2 systems are not used in these areas.	FPPM, Rev. 11, Table 5.1, Section E.3.(d) UFSAR, Section 9.8.1, "Low-Pressure Carbon Dioxide System" Fire Hazards Analysis, Rev. 14, Section 3.4.3

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.10.7 [Gaseous Suppression system CO2 Warnings]	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.	• Complies	A discharge delay time with audible alarm is incorporated into each automatic system design to allow personnel time to leave the area. CO2 systems are provided with an odorizer.	Fire Hazards Analysis, Rev. 14, Section 3.4.3 and Section 4.1.7. SD-12-COAUX-100, "System Description for Low Pressure Carbon Dioxide Fire Fighting System", Rev 1, Section 4.13, 4.17 and 6.2
3.10.8 [Gaseous Suppression System CO2 Required Disarming]	Positive mechanical means shall be provided to lock out total flooding carbon dioxide systems during work in the protected space.	• Complies	CO2 systems can be isolated by five different methods. These are: • Individual hazard "Detection Isolating Key-Lock Switches. • Grouped hazard "Main Detection Isolating Key-Lock Switches (Master Isolation Switches). • Automatic Isolation (Control Room Cable Vault only). • Header Shutoff Valves. • Tank Shutoff Valves. When entering a CO2 protected area, to assure safety, one of the above methods must be employed to isolate and block an operation of the CO2 system. The method selected is dependent on the length of time the work in the area is expected to take and the nature of the work.	SD-12-COAUX-100, "System Description for Low Pressure Carbon Dioxide Fire Fighting System", Rev 1, Section 9

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.10.9 [Gaseous Suppression System Cooling Considerations]	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.	• Complies	I&M performed a study that took into account "damage to safety-related electrical equipment due to thermal shock caused by gaseous suppression system actuations."	FPPM, Rev. 11, Section 12.1 item (3) Technical Evaluation 12.1, "Fire Suppression Effects Study", Rev. 0
3.10.10 [Gaseous Suppression System Decomposition Issues]	Particular attention shall be given to corrosive characteristics of agent decomposition products on safety systems.	• Complies	Corrosive characteristics of agent decomposition products has been considered.	SD-12-HALON-100, "Fire Protection - Halon Systems", Rev. 0, Section 1
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.	N/A

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
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 • Complies with use of EEEEs	**Complies:** The Auxiliary Building, Containment Buildings, Service Building, and Turbine Building are separated from other buildings by 3-hour barriers or by greater than 50ft of open space. The Auxiliary Building is adjacent to the Containment Buildings and Turbine Building. The Auxiliary Building is separated from the Containment Buildings and Turbine Building by a reinforced concrete wall with a 3 hour rated design. Openings are rated or have been evaluated as equivalent or adequate for the hazard. The Containment Buildings are adjacent to the Auxiliary Building. The Containment Buildings are separated from the Auxiliary Building by a reinforced concrete wall with a 3 hour rated design. Openings are rated or discussed with individual Fire Safety Analyses Reports. The Service Building is adjacent to the Turbine Building. The Service Building is separated from the Turbine Building by a reinforced concrete wall with a 3	FPPM, Rev. 11, Table 5.1, Section D, "General Guidelines for Plant Protection" CNP Fire Safety Analyses Reports, Rev. 0 Fire Hazards Analysis, Rev. 14 Engineering Equivalency Evaluation 9.39, "Fire Zone 70 (AA57A) to Fire Zone 129 (AA2A) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 11.46, "Seismic Gaps Between the Containment and Auxiliary Buildings Boundary Evaluation (Fire Areas AA2A, AA2B, AA3, AA7, AA8, AA9, AA10, AA11, AA27, AA29, AA30, AA31, AA34, AA35, AA37 and AA38)", Rev. 0 Engineering Equivalency Evaluation 11.54, "Unit 1 Main Control Room Cable Vault Penetration Seal W5111 Fire Zone 57 and 91 (Fire Areas AA50 and AA2A)", Rev. 0 Engineering Equivalency Evaluation 11.65, "Fire Door Closure Evaluation (Fire Areas AA2, AA7, AA8, AA14, AA15, AA23, AA24, AA30, AA31, AA34, AA35, AA36/42, AA37, AA38, AA39, AA41, AA43, AA44, AA45, AA48, and AA53)", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			hour rated design. Openings are rated or discussed with individual Fire Safety Analyses Reports. The Turbine Building is adjacent to the Auxiliary Building and the Service Building. The Turbine Building is separated from the Auxiliary Building and Service Building by a reinforced concrete wall with a 3 hour rated design. Openings are rated or discussed with individual Fire Safety Analyses Reports. **Complies with use of EEEEs:** A seismic gap exists around the Containment Buildings that provides an opening of approximately 6 in. between the Containment Buildings and the walls, ceilings and floors of the structures immediately adjacent to containment. This opening has been determined adequate by an engineering evaluation. CNP currently utilizes the exception to Section 3.11.1, which is endorsed.	

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
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 • Complies with use of EEEEs	**Complies:** Fire barriers required by Chapter 4 are identified in the individual Fire Safety Analysis Reports. A specific fire-resistance rating for all fire barriers is included All walls, floors, and ceilings separating fire areas are either reinforced concrete construction which exceed a 3 hour fire rating, or are of concrete block construction with a 3 hour fire resistance rating or have been evaluated as equivalent or adequate for the hazard. The design and installation of fire barriers meets the requirements of ASTM E 119. All openings for cable, pipe, and ductwork in walls, floor, and ceilings separating fire areas have been sealed with foamed in place silicone which was tested for up to five hours fire exposure in an ASTM E 119 wall fire test. Cable tray openings have been sealed and verified by ASTM E 119 tests. **Complies with use of EEEEs:** Each barrier which contained a feature with an unrated component was analyzed with respect to its fire suppression and detection systems,	CNP Fire Safety Analysis Reports, Rev. 0 Fire Hazards Analysis, Rev. 14 12-FPP-4030-066-025, "Inspection of Fire Rated Assemblies", Rev. 0 FPPM, Rev. 11, Table 5.1, Section D, "General Guidelines for Plant Protection" Engineering Equivalency Evaluation 11.7, "Fire Zone 5 (AA5/6) to Unit 1 Fire Zones 62A, 62B and 62C (AA54) and Unit 2 Fire Zones 63A, 63B and 63C (AA5) Removable Block Walls", Rev. 0 Engineering Equivalency Evaluation 11.9, "Turbine, Auxiliary and Containment Buildings Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 11.11, "Storage of Flammable Gases in Fire Areas AA2A, AA2B, AA3 and AA34", Rev. 0 Engineering Equivalency Evaluation 11.12, "Stairwells and Elevator Construction Boundary Evaluations (Fire Areas AA1, AA2A, AA2B, AA3, AA5/6, AA36 and AA42", Rev. 0 Engineering Equivalency Evaluation 11.18, "Radwaste Areas in Fire Zones

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			proximity to safe-shutdown equipment, and the impact that the unrated portion of the fire barrier could have on safe-shutdown capability. These barriers which contained unrated components have been evaluated as equivalent or adequate for the hazard.	3, 31 and 32 (AA3) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 11.36, "Unit 1 and 2 Hot Shutdown Panel Enclosure: Unit 1 Fire Zone 144 (AA50) and Unit Fire Zone 145 (AA51)", Rev. 0 Engineering Equivalency Evaluation 11.38, "Fire Protection Pump House (Fire Area YD)", Rev. 0 Engineering Equivalency Evaluation 11.39, "Fireproofing for the West Motor Driven Auxiliary Feedwater Pump Enclosures Fire Zones 17A (AA16), 17B (AA17), 80 (AA2A) and 84 (AA2B)", Rev. 0 Engineering Equivalency Evaluation 11.41, "Unit 1 Fire Zone 53 (AA46) and Unit 2 Fire Zone 54 (AA47) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 11.44, "Expansion of Fire Zone 33 and 146 and Unrated Fire Doors (361 and 362) Fire Zones 32, 33 and 34 (Fire Areas AA3, AA34 and AA35)", Rev. 0 Engineering Equivalency Evaluation 11.51, "Screenhouse and Water Intake System Boundary Evaluation Fire Zone 142 (AA2A) to Fire Zone 143 (YD)", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
				Engineering Equivalency Evaluation 11.66, "Yard (YD) to Fire Zone 19 (AA24) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 12.11, "Structural Steel Evaluations in Fire Areas AA2A, AA2B, AA3, AA34, AA35, AA56 and AA58", Rev. 0 Engineering Equivalency Evaluation 12.16, "Radiant Heat Shields for Fire Area AA58", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
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.) *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 • Complies with use of EEEEs	**Complies:** In general, fire-rated door assemblies or listed rated fire dampers having the fire resistance rating consistent with the fire resistance rating of the fire barrier are provided. Fire-rated assemblies which include fire-rated doors and fire dampers required by Chapter 4 are outlined in the CNP individual Fire Safety Analyses Reports. **Complies with use of EEEEs:** Where fire-rated door assemblies or listed rated fire dampers are not provided with the fire resistance rating consistent with the fire resistance rating of the fire barrier (e.g. hatches, water curtains, manways, etc.), the assemblies have been evaluated to be equivalent or adequate for the hazard.	CNP Fire Safety Analyses Reports, Rev. 0 Basis documentation for Engineering Equivalency Evaluations is listed in 3.11.3(1) through 3.11.3(3)

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.11.3 [NFPA 80 - Fire Door and Window Requirements] (1)	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"	• Complies with clarification • Complies by previous NRC approval • Complies with use of EEEEs	**Complies with clarification:** All doors are UL Class A (3 hour) fire rating or a UL Class B (1-1/2 hour) rating to be commensurate with the severity of the hazard as determined by the performance requirements established by Chapter 4 of NFPA 805. Per the FPPM, I&M has committed CNP to comply with NFPA 80. Modifications to rated fire doors are made in accordance with NFPA 80 in order to ensure that the fire protection features of the door are not degraded. Fire rated doors that are designed to be left in the open position, if desired, are provided with self-closing hardware which, when activated by exposure to the heat of a fire, allows the door to close. **Complies by previous NRC approval:** During the review for compliance with Appendix A to BTP 9.5-1, the NRC identified concerns relating to the installation placement and rating of fire doors at CNP. I&M committed to upgrading affected fire doors and per the NRC Safety Evaluation, dated July 31, 1979, which states:	FPPM, Rev. 11, Section 14.4.2 NRC Safety Evaluation supporting Amendment Nos. 31 and 12 to License No. DPR-58 and DPR-74, 7/31/79, page 13, Other Items Relating to the Station Fire Protection Program, item B I&M Letter "Request for Approval and Exemptions", dated March 31, 1983, Section 7.2.6 NRC Safety Evaluation "Donald C. Cook Nuclear Power Plant, Unit Nos. 1 and 2 Fire Protection – Request for Exemption from Requirements of Appendix R to 10 CFR 50, Section III.G and III.O", 12/23/83, page 5, Section 4.0, Conclusion Engineering Equivalency Evaluation 9.5, "Fire Zones 70 (AA57A) and 73 (AA57B) Hatch Evaluations", Rev. 0 Engineering Equivalency Evaluation 9.13, "Fire Zone 53 (AA46) and Fire Zone 57 (AA50) Hatch Evaluation", Rev. 0 Engineering Equivalency Evaluation 9.14, "Fire Zone 43 (AA36) and Fire Zone 56 (AA48) Hatch Evaluation", Rev. 0 Engineering Equivalency Evaluation 9.15, "Fire Zone 40B (AA39B) and

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			"We conclude that fire doors and dampers are provided or committed where necessary in accordance with the provisions of Appendix A to Branch Technical Position APCSB 9.5-1 and are, therefore, acceptable." These commitments to remedy any deficiencies listed in the aforementioned Safety Evaluation Report have been fulfilled per the FPPM, which states: *"The noted deficiencies were corrected or appropriate justifications have been prepared."* The fire doors where deficiencies were corrected or justifications prepared, as approved by the SE Report, are still used at CNP. There have been no plant modifications or other changes that would invalidate the basis for approval. The corrected doors remain unchanged. The justification for the any deficiencies remains valid and unchanged. **Complies with use of EEEEs:** Where any unrated doors are located in fire area boundaries, an evaluation has been	Fire Zone 55 (AA48) Hatch Evaluation", Rev. 0 Engineering Equivalency Evaluation 9.16, "Fire Zone 41 (AA40) and Fire Zone 55 (AA48) Hatch Evaluation", Rev. 0 Engineering Equivalency Evaluation 9.17, "Fire Zone 54 (AA47) and Fire Zone 58 (AA51) Hatch Evaluation", Rev. 0 Engineering Equivalency Evaluation 9.18, "Fire Zone 52 (AA3) and Fire Zone 59 (AA52) Hatch Evaluation", Rev. 0 Engineering Equivalency Evaluation 9.19, "Fire Zone 45 (AA43) and Fire Zone 60 (AA52) Hatch Evaluation", Rev. 0 Engineering Equivalency Evaluation 9.21, "Fire Zone 110 (AA2A) and Fire Zone 43 (AA36) Door Evaluation", Rev. 0 Engineering Equivalency Evaluation 9.22, "Fire Zone 111 (AA2B) and Fire Zone 44S (AA42) Door Evaluation", Rev. 0 Engineering Equivalency Evaluation 9.23, "Fire Zone 116 (AA9) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			performed to determine the doors are equivalent or adequate for the hazard.	9.24, "Fire Zone 117 (AA29) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 9.25, "Essential Service Water Pump House Hatch and Fire Damper Evaluation (Fire Areas AA2A, AA32 and AA33)", Rev. 0 Engineering Equivalency Evaluation 9.31, "Fire Zones 62A, 62B and 62C (AA54) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 9.32, "Fire Zones 63A, 63B and 63C (AA56) Boundary Evaluations", Rev. 0 Engineering Equivalency Evaluation 9.37, "Fire Zones 5 (AA5/6) and 32 (AA3) Boundary Evaluations", Rev. 0 Engineering Equivalency Evaluation 9.39, "Fire Zone 70 (AA57A) to Fire Zone 129 (AA2A) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 11.1, "Auxiliary Building El. 587' to Spent Fuel Heat Exchanger Pit Pump Room Hatch Boundary Evaluation Fire Zone 5 (AA5/6) and Fire Zone 36 (AA3) Hatch Evaluation", Rev. 0 Engineering Equivalency Evaluation 11.9, "Turbine, Auxiliary and Containment Buildings Boundary Evaluation", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
				Engineering Equivalency Evaluation 11.15, "Switchgear Room Construction Boundary Room Evaluation Unit 1 Fire Zones 14, 40A, 40B, 41 and 42A (AA13, AA39A, AA39B, AA40 and AA41) & Unit 2 Fire Zones 20, 45, 46A, 47A and 47B (AA25, AA43, AA44, AA45A and AA45B)", Rev. 0 Engineering Equivalency Evaluation 11.37, "Fire Zones 52 and Fire Zone 44N Hatch Evaluation", Rev. 0 Engineering Equivalency Evaluation 11.39, "Fireproofing For The West Motor Driven Auxiliary Feedwater Pump Enclosures Fire Zones 17A (AA16), 17B (AA17), 80 (AA2A), And 84 (AA2B)", Rev. 0 Engineering Equivalency Evaluation 11.44, "Expansion of Fire Zone 33 and 146 and Unrated Fire Doors (361 and 362) Fire Zones 32, 33, and 34 (Fire Areas AA3, AA34 and AA35)", Rev. 0 Engineering Equivalency Evaluation 11.56, "Turbine Building Main Steam Access Way Fire Zones 110 to 114, Fire Zones 111 to 115, Fire Zones 112 to 2N, Fire Zones 113 to 2S (Fire Areas AA2A, AA2B, AA2C)", Rev. 0 Engineering Equivalency Evaluation 11.65, "Fire Door Closure Evaluation

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
				(Fire Areas AA2, AA7, AA8, AA14, AA15, AA23, AA24, AA30, AA31, AA34, AA35, AA36/42, AA37, AA38, AA39, AA41, AA43, AA44, AA45, AA48, and AA53)", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.11.3 [NFPA 90A - Fire Damper Requirements] (2)	Passive fire protection devices such as doors and dampers shall conform with the following NFPA standards, as applicable: (2) NFPA 90A, "Standard for the Installation of Air-Conditioning and Ventilating Systems"	• Complies • Complies by previous NRC approval • Complies with use of EEEEs	**Complies:** All ventilation dampers carry UL Class A (3 hour) fire rating or a UL Class B (1-1/2 hour) rating to be commensurate with the severity of the hazard as determined by the performance requirements established by Chapter 4 of NFPA 805. Per the FPPM, I&M has committed CNP to comply with NFPA 90A. Modifications to rated fire dampers are made in accordance with NFPA 90A in order to ensure that the fire protection features of the damper are not degraded. **Complies by previous NRC approval:** Technical specification-related fire dampers and HVAC system designs have been reviewed by the NRC for damper placement and ratings. These dampers have also been reviewed by I&M for rating and installation. Per letter from I&M to the NRC dated June 15, 1984: *"In the area of HVAC ductwork, we have recently discovered that technical exemptions are required for 17 ducts which penetrate fire barriers. These areas are typified by low*	FPPM, Rev. 11, Section 14.4.3 I&M Letter 0692R "Request for Additional Technical Exemptions to Certain Fire Dampers and "Seismic Gaps", 6/15/84 I&M Letter 0692U "Appendix R Technical Exemption for Seismic Gaps and HVAC Duct Penetrations", 8/13/84 NRC Safety Evaluation of Fire Protection Requests, 8/27/85, Section 3.4 Engineering Equivalency Evaluation 9.1, "Fire Zone 43 (AA36) and 91 (AA2A) Duct Evaluation" Engineering Equivalency Evaluation 9.2, "Fire Zone 54 (AA47) and Fire Zone 73 (AA57B) Duct Evaluation" Engineering Equivalency Evaluation 9.3, "CCW Pump Air Supply Duct Evaluation: Fire Zone 44S (AA42)" Engineering Equivalency Evaluation 9.4, "Auxiliary Building Vertical Air Shafts Evaluation: Fire Zones 12 (AA11) and 22 (AA27)" Engineering Equivalency Evaluation 9.7, "Fire Zone 13 (AA12) and Fire Zone 14 (AA13) Boundary Evaluation"

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			combustible loading, and duct outlets being located in an area sufficiently removed from equipment important to the safe shutdown of the facility. Sound engineering evaluations can be used to justify our request for technical exemption of the requirements for fire dampers." Per letter from I&M to the NRC dated August 13, 1984: *"The evaluation concludes that, because of a low combustible loading of less than 15 minutes in all applicable fire areas/zones, the location of safe shutdown components/circuits and the detection and suppression systems available in the subject fire area/zones, adequate protection from duct related fire damage is provided and safe shutdown capability is ensured. As discussed with your staff, the evaluation includes five additional ventilation duct penetrations without fire dampers, that also require technical exemptions. These duct penetrations listed below were not identified in the June 15, 1984 letter."* The NRC Safety Evaluation, dated August 27, 1985 states:	Engineering Equivalency Evaluation 9.8, "Fire Zone 20 (AA25) and Fire Zone 21 (AA26) Boundary Evaluation" Engineering Equivalency Evaluation 9.33, "Fire Zone 6A (AA5/6) to 138B (AA1) Boundary Evaluations" Engineering Equivalency Evaluation 9.34, "Fire Zone 36 (AA3) to Fire Zone 5 (AA5/6) Boundary Evaluation" Engineering Equivalency Evaluation 9.35, "Fire Zone 108 (AA2A) to Fire Zone 33A (AA34) Boundary Evaluation" Engineering Equivalency Evaluation 9.36, "Fire Zone 109 (AA2B) to 34A (AA35) Boundary Evaluation" Engineering Equivalency Evaluation 9.37, "Fire Zones 5 (AA5/6) and 32 (AA3) Boundary Evaluations" Engineering Equivalency Evaluation 9.38, "Fire Zone 69 (AA3) to Fire Zones 108 (AA2A) and 109 (AA2B) Boundary Evaluations" Engineering Equivalency Evaluation 9.40, "Fire Zone 7 (AA7) to Fire Zone 61 (AA5/6) Boundary Elevation" Engineering Equivalency Evaluation 9.41, "Fire Zones 37 (AA36) and

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			"Based on our evaluation, we conclude that we have reasonable assurance that the 22 Auxiliary Building undampered ventilation duct penetrations will not affect safe-shutdown in the event of a fire in Fire Area A, B, C, D or E. The lack of fire dampers in these 22 ventilation duct penetrations is, therefore, an acceptable deviation from the guidelines of Section D.I.(j) of Appendix A to BTP APCSB 9.5-1." The 22 undampered ventilation duct penetrations, as approved by the SE Report, still exist at CNP. There have been no plant modifications or other changes that would invalidate the basis for approval. The justification for the ventilation ducts remains valid and unchanged. **Complies with use of EEEEs:** Engineering equivalency evaluations have been performed for any unrated dampers located in fire area boundaries. These engineering equivalency evaluations determined the dampers are equivalent or adequate for the hazard.	51(AA3) HVAC Duct Penetrations" Engineering Equivalency Evaluation 11.14, "Cable Spreading Room Construction Boundary Evaluation (Fire Areas AA3,AA7, AA8, AA9, AA10, AA29, AA30, AA31, AA34, AA35, AA36, AA37, AA38, AA42, AA48, AA50, AA51 and AA52)" Engineering Equivalency Evaluation 11.15, "Switchgear Room Construction Boundary Room Evaluation Unit 1 Fire Zones 14, 40A, 40B, 41 and 42A (AA13, AA39A, AA39B, AA40 and AA41) & Unit 2 Fire Zones 20, 45, 46A, 47A and 47B (AA25, AA43, AA44, AA45A and AA45B)" Engineering Equivalency Evaluation 11.16, "Lube Oil Storage Rooms Fire Zones 83 and 95 (AA2A), and 88 and 100 (AA2B) Boundary Evaluation" Engineering Equivalency Evaluation 11.45, "Auxiliary Building HVAC Duct Penetrations Boundary Evaluation Fire Areas AA1, AA3, AA5/6, AA36 and AA42" Engineering Equivalency Evaluation 11.56, "Turbine Building Main Steam Access Way Fire Zones 110 to 114, Fire Zones 111 to 115, Fire Zones 112 to 2N, Fire Zones 113 to 2S (Fire Areas AA2A, AA2B, AA2C)"

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
				Engineering Equivalency Evaluation 12.13, "Fire Damper Closure Review"
3.11.3 [NFPA 101 - Life Safety Code Requirements] (3)	Passive fire protection devices such as doors and dampers shall conform with the following NFPA standards, as applicable: (3) NFPA 101, "Life Safety Code"	• Complies with clarification	CNP complies with clarification with regards to NFPA 101, 2000 Edition. NFPA 101 compliance is achieved through NFPA 80 and NFPA 90A. NFPA 101, 2000 Edition, Section 8.2.3.2.1(a) with regards to rated fire door assemblies refers to NFPA 80. NFPA 101, 2000 Edition, Section 9.2.1 with regards to rated fire dampers refers to NFPA 90A. Table B-1, Section 3.11.3(1) and 3.11.3(2) discuss compliance of NFPA 80 and NFPA 90A.	FPPM, Rev. 11, Section 7.0 and Sections 14.4.2 and 14.4.3

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
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.	• Complies • Complies by previous NRC approval • Complies with use of EEEEs	**Complies:** CNP specification ES-FIRE-0601-QCF details the requirements for the installation and maintenance of fire rated seals and fire stops at CNP. The scope of this specification is for penetration seals that are installed or are being installed at CNP that will function to prevent the spread of fire. Additionally, per specification ES-FIRE-0601-QCF, CNP allows the use of additional test standards ASTM E-814, MEEB 634 and NFPA 251 for development of standard fire test, and qualification of fire rated penetration seals. **Complies by previous NRC approval:** By the response to Appendix A to Branch Technical Position APCSB 9.5-1, dated January 31, 1977, item D.1.(j) I&M stated: *"all openings for cable, pipe, and ductwork in these walls, floors, and ceilings have been sealed with foamed in place silicone which was tested in march 1975 for up to five hours fire exposure in an ASTM E 119 wall fire test."*	Plant Specification ES-FIRE-0601-QCF, "Fire Rated Seals", Rev. 3 I&M response to Appendix A to Branch Technical Position APCSB 9.5-1 for Units No. 1 and 2, 1/31/77, Section D.1.(j) NRC Safety Evaluation dated 7/31/79, Pg. 13, "Other Items Relating to the Station Fire Protection Program", Section A. Engineering Equivalency Evaluation 9.35, "Fire Zone 108 (AA2A) to Fire Zone 33A (AA34) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 9.36, "Fire Zone 109 (AA2B) to 34A (AA35) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 9.37, "Fire Zones 5 (AA5/6) and 32 (AA3) Boundary Evaluations", Rev. 0 Engineering Equivalency Evaluation 11.2, "Fire Zone 7 (AA7) to Fire Zone 38 (AA37) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 11.3, "Fire Zone 27 (AA31) to Fire Zone 39 (AA38)", Rev. 0 Engineering Equivalency Evaluation 11.4, "Unit 1 Auxiliary Building

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			The NRC Safety Evaluation, dated July 31, 1979 states: *"The test report shows that the penetration seal passed a 3-hour E-119 type fire exposure test. However, the test included only the Unit 2 penetration design. The licensees have provided a comparison between Unit 1 and Unit 2 penetration seal designs to justify that the Unit 2 design is the "worst case" for fire testing. We agree with this evaluation and conclude that the Unit 2 seal tests are acceptable for the Unit 1 seals. We conclude that the penetration fire stops which are in place provide sufficient protection from the unbounded spread of fire along electrical cables. We base this conclusion on our knowledge of ASTM E-119 fire tests including those cited by the licensees which substantiate the fire resistive ability of penetration fire stops constructed with silicone foam."* The foamed in place silicone design, as approved by the SE Report, is still in use at CNP. There have been no plant modifications or other changes that would invalidate the basis for approval. The foamed in place silicone design and the	Elevation 620 ft.-6 in. to Auxiliary Cable Vault Fire Zone 44n to Fire Zone 56", Rev. 0 Engineering Equivalency Evaluation 11.5, "Unit 1 EPS/4 KV Switchgear Complex Ventilation Shaft Boundary Evaluation (Fire Areas AA39A, AA39B, AA40, AA41 and AA48)", Rev. 0 Engineering Equivalency Evaluation 11.6, "Fire Zones 45 (AA43), 46A through 46D (AA44), 47A (AA45A), 47B (AA45B) to Fire Zone 60 (AA52) Shaft Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 11.7, "Fire Zone 5 (AA5/6) to Unit 1 Fire Zones 62A, 62B and 62C (AA54) and Unit 2 Fire Zones 63A, 63B and 63C (AA5) Removable Block Walls", Rev. 0 Engineering Equivalency Evaluation 11.15, "Switchgear Room Construction Boundary Room Evaluation Unit 1 Fire Zones 14, 40A, 40B, 41 and 42A (AA13, AA39A, AA39B, AA40 and AA41) & Unit 2 Fire Zones 20, 45, 46A, 47A and 47B (AA25, AA43, AA44, AA45A and AA45B)", Rev. 0 Engineering Equivalency Evaluation 11.16, "Lube Oil Storage Rooms Fire Zones 83 and 95 (AA2A), and 88 and 100 (AA2B) Boundary Evaluation",

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			justification of the worst case configuration has not changed. **Complies with use of EEEEs:** Where through penetration fire stops are not protected in accordance with Section 3.11.4, these assemblies have been evaluated to be equivalent or adequate for the hazard.	Rev. 0 Engineering Equivalency Evaluation 11.17, "Diesel Generator Fuel oil Day Tank Rooms Fire Zones 15 (AA14), 16 (AA15), 18 (AA23) and 19 (AA24) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 11.20, "Narrow Space Openings between Penetrating Items and the Barrier or Between Penetrating Items Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 11.24, "Fire Retention Capability of Nonconforming Fire Seals in Fire Zones having a Low Fire Severity", Rev. 0 Engineering Equivalency Evaluation 11.26, "Fire Retention Capability of a HELB 3 Pressure Boundary Seal (Fire Areas AA19, AA20, AA21 and AA22)", Rev. 0 Engineering Equivalency Evaluation 11.27, "Generic Fire Seal Design 1", Rev. 0 Engineering Equivalency Evaluation 11.28, "Generic Fire Seal Design 2 (Fire Areas AA7, AA8, AA39A, AA40, AA43, AA45A, AA45B, AA48 and AA52)", Rev. 0 Engineering Equivalency Evaluation 11.29, "Generic Fire Seal Design 3 in

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
				Fire Areas AA2A, AA2B, and AA15", Rev. 0 Engineering Equivalency Evaluation 11.30, "Generic Fire Seal Design 4 (AA2)", Rev. 0 Engineering Equivalency Evaluation 11.31, "Generic Fire Seal Design 5 (Fire Areas AA31 and AA38)", Rev. 0 Engineering Equivalency Evaluation 11.32, "Generic Fire Seal Design 6 (AA2)", Rev. 0 Engineering Equivalency Evaluation 11.33, "Generic Fire Seal Design 7 (Fire Areas AA7 and AA37)", Rev. 0 Engineering Equivalency Evaluation 11.34, "Generic Fire Seal Design 8", Rev. 0 Engineering Equivalency Evaluation 11.35, "Generic Fire Seal Design 9", Rev. 0 Engineering Equivalency Evaluation 11.47, "Fire Zones 44N (AA36), 44S (AA42) and 52 (AA3) Penetration Seals", Rev. 0 Engineering Equivalency Evaluation 11.48, "Fire Zones 15 (AA14), 16 (AA15) 18 (AA23) and 19 (AA24) Penetration Seals", Rev. 0 Engineering Equivalency Evaluation

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
				11.49, "Acceptability of Valve 2-FP-392-2-11 RCP Fire Suppression Priming Water Check Valve (Fire Area AA58)", Rev. 0 Engineering Equivalency Evaluation 11.50, "Embedded Conduit Fire Wrap Protection (Fire Areas AA14 and AA24)", Rev. 0 Engineering Equivalency Evaluation 11.51, "Screenhouse and Water Intake System Boundary Evaluation Fire Zone 142 (AA2A) to Fire Zone 143 (YD)", Rev. 0 Engineering Equivalency Evaluation 11.54, "Unit 1 Main Control Room Cable Vault Penetration Seal W5111 Fire Zone 57 and 91 (Fire Areas AA50 and AA2A)", Rev. 0 Engineering Equivalency Evaluation 11.56, "Turbine Building Main Steam Access Way Fire Zones 110 to 114, Fire Zones 111 to 115, Fire Zones 112 to 2N, Fire Zones 113 to 2S (Fire Areas AA2A, AA2B, AA2C)", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.11.4 [Annular Space Requirements] (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.	• Complies • Complies by previous NRC approval • Complies with use of EEEEs	**Complies:** CNP specification ES-FIRE-0601-QCF details the requirements for the installation and maintenance of fire rated seals and fire stops at CNP. The scope of this specification is for penetration seals that are installed or will be installed at CNP that will function to prevent the spread of fire. Per this specification, the contractor installing the fire seals must furnish documentation that the configurations have passed ASTM E-119 fire and hose stream tests that have been performed and documented by an independent laboratory. Per the FPPM, penetration seals are required to be fire tested to demonstrate they meet the required fire rating of the barrier. Seals at CNP are tested in accordance with ASTM E-119 requirements. Additionally, per specification ES-FIRE-0601-QCF, the standards which can be used for development of standard fire test and qualification of fire rated penetration seals are ASTM E-814, MEEB 634 and NFPA 251.	FPPM, Rev. 11, Section 12.2.2 and Table 5.1, Section D, "General Guidelines for Plant Protection" Plant Specification ES-FIRE-0601-QCF, "Fire Rated Seals", Rev. 3, 9/17.2010, Section 1.2, Section 14.2 and Attachment 1, Typical Details I&M Donald C. Cook Nuclear Plant "Response to Appendix A to Branch Technical Position APCSB 9.5-1 for Units No. 1 and 2", 1/31/77, Section D.1.(j) NRC Safety Evaluation Report dated 7/31/79, Pg. 13, "Other Items Relating to the Station Fire Protection Program", Section A. Engineering Equivalency Evaluation 9.35, "Fire Zone 108 (AA2A) to Fire Zone 33A (AA34) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 9.36, "Fire Zone 109 (AA2B) to 34A (AA35) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 9.37, "Fire Zones 5 (AA5/6) and 32 (AA3) Boundary Evaluations", Rev. 0 Engineering Equivalency Evaluation 11.2, "Fire Zone 7 (AA7) to Fire Zone 38 (AA37) Boundary Evaluation", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			Complies by previous NRC approval: By the response to Appendix A to Branch Technical Position APCSB 9.5-1, dated January 31, 1977, item D.1.(j) I&M stated: *"all openings for cable, pipe, and ductwork in these walls, floors, and ceilings have been sealed with foamed in place silicone which was tested in march 1975 for up to five hours fire exposure in an ASTM E 119 wall fire test."* The NRC Safety Evaluation, dated July 31, 1979 states: *"The test report shows that the penetration seal passed a 3-hour E-119 type fire exposure test. However, the test included only the Unit 2 penetration design. The licensees have provided a comparison between Unit 1 and Unit 2 penetration seal designs to justify that the Unit 2 design is the "worst case" for fire testing. We agree with this evaluation and conclude that the Unit 2 seal tests are acceptable for the Unit 1 seals. We conclude that the penetration fire stops which are in place provide sufficient protection from the unbounded spread of fire along electrical*	Engineering Equivalency Evaluation 11.3, "Fire Zone 27 (AA31) to Fire Zone 39 (AA38)", Rev. 0 Engineering Equivalency Evaluation 11.4, "Unit 1 Auxiliary Building Elevation 620 ft.-6 in. to Auxiliary Cable Vault Fire Zone 44n to Fire Zone 56", Rev. 0 Engineering Equivalency Evaluation 11.5, "Unit 1 EPS/4 KV Switchgear Complex Ventilation Shaft Boundary Evaluation (Fire Areas AA39A, AA39B, AA40, AA41 and AA48)", Rev. 0 Engineering Equivalency Evaluation 11.6, "Fire Zones 45 (AA43), 46A through 46D (AA44), 47A (AA45A), 47B (AA45B) to Fire Zone 60 (AA52) Shaft Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 11.7, "Fire Zone 5 (AA5/6) to Unit 1 Fire Zones 62A, 62B and 62C (AA54) and Unit 2 Fire Zones 63A, 63B and 63C (AA5) Removable Block Walls", Rev. 0 Engineering Equivalency Evaluation 11.15, "Switchgear Room Construction Boundary Room Evaluation Unit 1 Fire Zones 14, 40A, 40B, 41 and 42A (AA13, AA39A, AA39B, AA40 and AA41) & Unit 2 Fire Zones 20, 45, 46A, 47A and 47B

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			cables. We base this conclusion on our knowledge of ASTM E-119 fire tests including those cited by the licensees which substantiate the fire resistive ability of penetration fire stops constructed with silicone foam." The foamed in place silicone design, as approved by the SE Report, is still in use at CNP. There have been no plant modifications or other changes that would invalidate the basis for approval. The foamed in place silicone design and the justification of the worst case configuration has not changed. **Complies with use of EEEEs:** Engineering equivalency evaluations have been performed for any penetrations that do not provide a fire resistance rating at least equal to that of the fire area barrier itself. These engineering equivalency evaluations determined the penetrations are equivalent or adequate for the hazard.	(AA25, AA43, AA44, AA45A and AA45B)", Rev. 0 Engineering Equivalency Evaluation 11.16, "Lube Oil Storage Rooms Fire Zones 83 and 95 (AA2A), and 88 and 100 (AA2B) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 11.17, "Diesel Generator Fuel oil Day Tank Rooms Fire Zones 15 (AA14), 16 (AA15), 18 (AA23) and 19 (AA24) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 11.20, "Narrow Space Openings between Penetrating Items and the Barrier or Between Penetrating Items Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 11.24, "Fire Retention Capability of Nonconforming Fire Seals in Fire Zones having a Low Fire Severity", Rev. 0 Engineering Equivalency Evaluation 11.26, "Fire Retention Capability of a HELB 3 Pressure Boundary Seal (Fire Areas AA19, AA20, AA21 and AA22)", Rev. 0 Engineering Equivalency Evaluation 11.27, "Generic Fire Seal Design 1", Rev. 0 Engineering Equivalency Evaluation

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
				11.28, "Generic Fire Seal Design 2 (Fire Areas AA7, AA8, AA39A, AA40, AA43, AA45A, AA45B, AA48 and AA52)", Rev. 0 Engineering Equivalency Evaluation 11.29, "Generic Fire Seal Design 3 in Fire Areas AA2A, AA2B, and AA15", Rev. 0 Engineering Equivalency Evaluation 11.30, "Generic Fire Seal Design 4 (AA2)", Rev. 0 Engineering Equivalency Evaluation 11.31, "Generic Fire Seal Design 5 (Fire Areas AA31 and AA38)", Rev. 0 Engineering Equivalency Evaluation 11.32, "Generic Fire Seal Design 6 (AA2)", Rev. 0 Engineering Equivalency Evaluation 11.33, "Generic Fire Seal Design 7 (Fire Areas AA7 and AA37)", Rev. 0 Engineering Equivalency Evaluation 11.34, "Generic Fire Seal Design 8", Rev. 0 Engineering Equivalency Evaluation 11.35, "Generic Fire Seal Design 9", Rev. 0 Engineering Equivalency Evaluation 11.47, "Fire Zones 44N (AA36), 44S (AA42) and 52 (AA3) Penetration Seals", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
				Engineering Equivalency Evaluation 11.48, "Fire Zones 15 (AA14), 16 (AA15) 18 (AA23) and 19 (AA24) Penetration Seals", Rev. 0 Engineering Equivalency Evaluation 11.49, "Acceptability of Valve 2-FP-392-2-11 RCP Fire Suppression Priming Water Check Valve (Fire Area AA58)", Rev. 0 Engineering Equivalency Evaluation 11.50, "Embedded Conduit Fire Wrap Protection (Fire Areas AA14 and AA24)", Rev. 0 Engineering Equivalency Evaluation 11.51, "Screenhouse and Water Intake System Boundary Evaluation Fire Zone 142 (AA2A) to Fire Zone 143 (YD)", Rev. 0 Engineering Equivalency Evaluation 11.54, "Unit 1 Main Control Room Cable Vault Penetration Seal W5111 Fire Zone 57 and 91 (Fire Areas AA50 and AA2A)", Rev. 0 Engineering Equivalency Evaluation 11.56, "Turbine Building Main Steam Access Way Fire Zones 110 to 114, Fire Zones 111 to 115, Fire Zones 112 to 2N, Fire Zones 113 to 2S (Fire Areas AA2A, AA2B, AA2C)", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
3.11.4 [Conduit Internal Fire Seals] (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 • Complies by previous NRC approval • Complies with use of EEEEs	**Complies:** CNP specification ES-FIRE-0601-QCF details the requirements for the installation and maintenance of fire rated seals and fire stops at CNP. **Complies by previous NRC approval:** By I&M submittal, dated October 20, 1988, Pg. 2 stated: *"In consonance with our policy to maintain a safe as possible plant, we plan to seal conduits that meet the following criteria:* *1) An open-ended conduit is one in which the contained cables exit the conduit into a non-enclosed air space and do not directly enter into a metal enclosure such as a junction box or other similar noncombustible closure.* *2) When both ends of a double open-ended conduit terminate at the wall, it will be treated as a sleeve and sealed.* *3) For double open-ended conduits smaller than 2 inches in diameter:* *a. When both ends of the conduit terminate less than one foot from the barrier, at least one end will be sealed.* *b. When only one end of the conduit terminates less than one foot from the barrier, only that*	FPPM, Rev. 11, Section 12.2.4 and Table 5.1, Section D, "General Guidelines for Plant Protection" Plant Specification ES-FIRE-0601-QCF, "Fire Rated Seals", Rev. 3, 9/17.2010, Section 7.8, 8.4.4 and Attachment 1, Typical Details. I&M Letter "Status of Internal Conduit Fire Seal Program and NRC Inspection Report 85013, Item 2.R" Dated 10/20/88, Pg. 2 NRC Safety Evaluation Report dated 4/26/90, evaluation of I&M response to Unresolved Issue related to post-fire safe shutdown methodology, Pg. 10, Section 2.18.2 Engineering Equivalency Evaluation 9.35, "Fire Zone 108 (AA2A) to Fire Zone 33A (AA34) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 9.36, "Fire Zone 109 (AA2B) to 34A (AA35) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 9.37, "Fire Zones 5 (AA5/6) and 32 (AA3) Boundary Evaluations", Rev. 0 Engineering Equivalency Evaluation 11.2, "Fire Zone 7 (AA7) to Fire Zone 38 (AA37) Boundary Evaluation", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			end of the conduit will be sealed. *4) For double open-ended conduits 2 inches in diameter:* *a. When both ends of the conduit terminate less than 3 feet from the barrier, at least one end will be sealed.* *b. When only one end of the conduit terminates less than 3 feet from the barrier, only that end of the conduit will be sealed.* *5) Double open-ended conduits greater than 2 inches in diameter will be sealed on at least one end."* The NRC Safety Evaluation, dated April 26, 1990 states: *"Internal conduit seals are provided as delineated in a letter to the staff dated October 20, 1988. The internal seal program is consistent with the guidance provided in Appendix A to BTP APCSB 9.5-1 and is, therefore, acceptable."* The internal conduit sealing criteria, as approved by the SE Report, is still in use at CNP. There have been no plant modifications or other changes that would invalidate the basis for approval. The criteria for internally sealing conduit has	Engineering Equivalency Evaluation 11.3, "Fire Zone 27 (AA31) to Fire Zone 39 (AA38)", Rev. 0 Engineering Equivalency Evaluation 11.4, "Unit 1 Auxiliary Building Elevation 620 ft.-6 in. to Auxiliary Cable Vault Fire Zone 44n to Fire Zone 56", Rev. 0 Engineering Equivalency Evaluation 11.5, "Unit 1 EPS/4 KV Switchgear Complex Ventilation Shaft Boundary Evaluation (Fire Areas AA39A, AA39B, AA40, AA41 and AA48)", Rev. 0 Engineering Equivalency Evaluation 11.6, "Fire Zones 45 (AA43), 46A through 46D (AA44), 47A (AA45A), 47B (AA45B) to Fire Zone 60 (AA52) Shaft Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 11.7, "Fire Zone 5 (AA5/6) to Unit 1 Fire Zones 62A, 62B and 62C (AA54) and Unit 2 Fire Zones 63A, 63B and 63C (AA5) Removable Block Walls", Rev. 0 Engineering Equivalency Evaluation 11.15, "Switchgear Room Construction Boundary Room Evaluation Unit 1 Fire Zones 14, 40A, 40B, 41 and 42A (AA13, AA39A, AA39B, AA40 and AA41) & Unit 2 Fire Zones 20, 45, 46A, 47A and 47B

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
			not changed. **Complies with use of EEEEs:** Engineering equivalency evaluations have been performed for any penetrations that do not provide a fire resistance rating at least equal to that of the fire area barrier itself. These engineering equivalency evaluations determined the penetrations are equivalent or adequate for the hazard.	(AA25, AA43, AA44, AA45A and AA45B)", Rev. 0 Engineering Equivalency Evaluation 11.16, "Lube Oil Storage Rooms Fire Zones 83 and 95 (AA2A), and 88 and 100 (AA2B) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 11.17, "Diesel Generator Fuel oil Day Tank Rooms Fire Zones 15 (AA14), 16 (AA15), 18 (AA23) and 19 (AA24) Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 11.20, "Narrow Space Openings between Penetrating Items and the Barrier or Between Penetrating Items Boundary Evaluation", Rev. 0 Engineering Equivalency Evaluation 11.24, "Fire Retention Capability of Nonconforming Fire Seals in Fire Zones having a Low Fire Severity", Rev. 0 Engineering Equivalency Evaluation 11.26, "Fire Retention Capability of a HELB 3 Pressure Boundary Seal (Fire Areas AA19, AA20, AA21 and AA22)", Rev. 0 Engineering Equivalency Evaluation 11.27, "Generic Fire Seal Design 1", Rev. 0 Engineering Equivalency Evaluation

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
				11.28, "Generic Fire Seal Design 2 (Fire Areas AA7, AA8, AA39A, AA40, AA43, AA45A, AA45B, AA48 and AA52)", Rev. 0 Engineering Equivalency Evaluation 11.29, "Generic Fire Seal Design 3 in Fire Areas AA2A, AA2B, and AA15", Rev. 0 Engineering Equivalency Evaluation 11.30, "Generic Fire Seal Design 4 (AA2)", Rev. 0 Engineering Equivalency Evaluation 11.31, "Generic Fire Seal Design 5 (Fire Areas AA31 and AA38)", Rev. 0 Engineering Equivalency Evaluation 11.32, "Generic Fire Seal Design 6 (AA2)", Rev. 0 Engineering Equivalency Evaluation 11.33, "Generic Fire Seal Design 7 (Fire Areas AA7 and AA37)", Rev. 0 Engineering Equivalency Evaluation 11.34, "Generic Fire Seal Design 8", Rev. 0 Engineering Equivalency Evaluation 11.35, "Generic Fire Seal Design 9", Rev. 0 Engineering Equivalency Evaluation 11.47, "Fire Zones 44N (AA36), 44S (AA42) and 52 (AA3) Penetration Seals", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
				Engineering Equivalency Evaluation 11.48, "Fire Zones 15 (AA14), 16 (AA15) 18 (AA23) and 19 (AA24) Penetration Seals", Rev. 0
				Engineering Equivalency Evaluation 11.49, "Acceptability of Valve 2-FP-392-2-11 RCP Fire Suppression Priming Water Check Valve (Fire Area AA58)", Rev. 0
				Engineering Equivalency Evaluation 11.50, "Embedded Conduit Fire Wrap Protection (Fire Areas AA14 and AA24)", Rev. 0
				Engineering Equivalency Evaluation 11.51, "Screenhouse and Water Intake System Boundary Evaluation Fire Zone 142 (AA2A) to Fire Zone 143 (YD)", Rev. 0
				Engineering Equivalency Evaluation 11.54, "Unit 1 Main Control Room Cable Vault Penetration Seal W5111 Fire Zone 57 and 91 (Fire Areas AA50 and AA2A)", Rev. 0
				Engineering Equivalency Evaluation 11.56, "Turbine Building Main Steam Access Way Fire Zones 110 to 114, Fire Zones 111 to 115, Fire Zones 112 to 2N, Fire Zones 113 to 2S (Fire Areas AA2A, AA2B, AA2C)", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
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*	• Complies • Complies with use of EEEEs	**Complies:** ERFBS that are credited to meet the requirements of NFPA 805 Chapter 4 are identified in the individual Fire Safety Analysis Reports. ERFBS are installed to meet the requirements of GL 86-10, Supplement 1. **Complies with use of EEEEs:** Engineering Equivalency Evaluation 11.57 evaluates unprotected supports as adequate for the hazard.	CNP Fire Safety Analysis Reports 12-FPP-4030-066-016, "Inspection of Thermo-Lag, Darmatt and Mecatiss wrapped enclosures", Rev. 2. FPPM, Rev. 11, Table 5.1, Section 8.2 and Table 8-1. Engineering Equivalency Evaluation 11.57, "Fire-Wrapped Cable Trays and Conduit Evaluations (Fire Areas AA14, AA24, AA32, AA39A, AA45A, AA2A and AA2B)", Rev. 0

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NFPA 805 Element	NFPA 805 Requirement	Compliance Statement	Compliance Basis	Reference Document
	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.*			

B. NEI 04-02 Table B-2 – Nuclear Safety Capability Assessment – Methodology Review

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Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

A comprehensive list of systems and equipment and their interrelationships to be analyzed for a fire event shall be developed. The equipment list shall contain an inventory of those critical components required to achieve the nuclear safety performance criteria of Section 1.5. Components required to achieve and maintain the nuclear safety functions and components whose fire-induced failure could prevent the operation or result in the maloperation of those components needed to meet the nuclear safety criteria shall be included. Availability and reliability of equipment selected shall be evaluated.

NEI 00-01 Ref

3 Deterministic Methodology

NEI 00-01 Section 3 Guidance

This section discusses a generic deterministic methodology and criteria that licensees can use to perform a post-fire safe shutdown analysis to address regulatory requirements. The plant-specific analysis approved by NRC is reflected in the plant's licensing basis. The methodology described in this section is also an acceptable method of performing a post-fire safe shutdown analysis. This methodology is indicated in Figure 3-1 (refer to hardcopy of NEI 00-01 for Figure). Other methods acceptable to NRC may also be used. Regardless of the method selected by an individual licensee, the criteria and assumptions provided in this guidance document may apply. The methodology described in Section 3 is based on a computer database oriented approach, which is utilized by several licensees to model Appendix R data relationships. This guidance document, however, does not require the use of a computer database oriented approach.

The requirements of Appendix R Sections III.G.1, III.G.2 and III.G.3 apply to equipment and cables required for achieving and maintaining safe shutdown in any fire area. Although equipment and cables for fire detection and suppression systems, communications systems and 8-hour emergency lighting systems are important features, this guidance document does not address them.

Applicability

Applicable

Comments

The CNP utilizes a computer database approach (SAFE™)for performing post-fire safe shutdown analysis.

Alignment Statement

Aligns

Alignment Basis

The following documentation addresses the methodology implemented by I&M for the Donald. C. Cook Nuclear Power Plant (CNP) and demonstrates consistencies with the guidance provided in NEI 00-01.

The subsequent Table B-2 sections and paragraphs present a line by line comparison of NEI 00-01, Revision 1 as endorsed by Reg. Guide 1.205, to the deterministic methodology used by I&M to determine if the Nuclear Safety Performance Criteria are being met for maintaining the fuel in a safe and stable condition for all modes and plant configurations. In general, the CNP methodology is consistent with the guidance provided in NEI 00-01, Revision 1 except as noted in the subsequent individual paragraph or section within this table.

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NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

Safe Shutdown Systems Analysis (SSSA) Rev 9

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NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance

3.1 Safe Shutdown Systems and Path Development	This section discusses the identification of systems available and necessary to perform the required safe shutdown functions. It also provides information on the process for combining these systems into safe shutdown paths. Appendix R Section III.G.1.a requires that the capability to achieve and maintain hot shutdown be free of fire damage. It is expected that the term "free of fire damage" will be further clarified in a forthcoming Regulatory Issue Summary. Appendix R Section III.G.1.b requires that repairs to systems and equipment necessary to achieve and maintain cold shutdown be completed within 72 hours. It is the intent of the NRC that requirements related to the use of manual operator actions will be addressed in a forthcoming rulemaking.
	
	The goal of post-fire safe shutdown is to assure that a one train of shutdown systems, structures, and components remains free of fire damage for a single fire in any single plant fire area. This goal is accomplished by determining those functions important to achieve and maintain hot shutdown. Safe shutdown systems are selected so that the capability to perform these required functions is a part of each safe shutdown path. The functions important to post-fire safe shutdown generally include, but are not limited to the following:
	
	- Reactivity Control
	- Pressure Control Systems
	- Inventory Control Systems
	- Decay Heat Removal Systems
	- Process Monitoring
	- Support Systems
	    * Electrical systems
	    * Cooling systems
	
	These functions are of importance because they have a direct bearing on the safe shutdown goal of being able to achieve and maintain hot shutdown which ensures the integrity of the fuel, the reactor pressure vessel, and the primary containment. If these functions are preserved, then the plant will be safe because the fuel, the reactor and the primary containment will not be damaged. By assuring that this equipment is not damaged and remains functional, the protection of the health and safety of the public is assured.
	
	In addition to the above listed functions, Generic Letter 81-12 specifies consideration of associated circuits with the potential for spurious equipment operation and/or loss of power source, and the common enclosure failures. Spurious operations/actuations can affect the accomplishment of the post-fire safe shutdown functions listed above. Typical examples of the effects of the spurious operations of concern are the following:
	
	- A loss of reactor pressure vessel/reactor coolant inventory in excess of the safe shutdown makeup capability

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NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

- A flow loss or blockage in the inventory makeup or decay heat removal systems being used for the required safe shutdown path.

Spurious operations are of concern because they have the potential to directly affect the ability to achieve and maintain hot shutdown, which could affect the fuel and cause damage to the reactor pressure vessel or the primary containment. Common power source and common enclosure concerns could also affect these and must be addressed.

Applicability

Applicable

Comments

The text in Section III.G.1.b does not apply to the NFPA 805 Transition in that the requirement is to achieve "safe and stable state" in NFPA 805 versus the ability "to achieve and maintain cold shutdown within 72 hours" in Appendix R section III.G.1.b.

Alignment Statement

Aligns

Alignment Basis

Reference: SSCA, Section 2, "Safe Shutdown Systems, Components and Circuits Method of Investigation", Section 2.2, "The specific safe shutdown functions necessary to satisfy Appendix R acceptance criteria are as follows:

a. Reactivity Control Function,
b. Reactor Coolant Makeup Control Function,
c. Reactor Coolant Pressure Control Function,
d. Reactor Heat Removal Function,
e. Process Monitoring Function, and
f. Miscellaneous Supporting Functions."

Reference: SSCA, Section 2.5, "The safe shutdown component list developed for CNP Units 1 and 2 includes the minimum components required to protect the safe shutdown capability from the exposure fire damage postulated in Appendix R."

As pointed out in Section 1.3.1 of NFPA 805, given a fire, a plant is not required to transition to cold shutdown but instead provide reasonable assurance to achieve and maintain the fuel in a safe and stable condition. During transition, the CNP fire area assessments documented the method of accomplishment of the NFPA 805 performance goals required to achieve and maintain safe and stable conditions (i.e., Hot Standby).

Reference SSCA, Section 2.7.1, "The separation and protection requirements of 10 CFR 50, Appendix R apply not only to safe shutdown circuits but also to "associated" circuits that could prevent operation or cause malfunction of shutdown systems and equipment. The identification of these associated circuits of

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NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

concern was performed for CNP in accordance with NRC Generic Letter 81-12 and the Staff's Clarification to the Generic Letter. The latter further defined these associated circuits of concern as those which have a physical separation less than that required by Section III.G.2 of Appendix R and one of the following characteristics:

a. A common power source with the shutdown equipment and the power source is not electrically protected from the post fire shutdown circuit of concern by coordinated circuit breakers, fuses, or similar devices; or,

b. A connection to circuits or equipment whose spurious operation would adversely affect the shutdown capability, e.g. RHR/RCS isolation valves; or

c. A common enclosure, e.g., raceway, panel, junction box, with shutdown cables, and,
1. The cables are not electrically protected from the post fire shutdown circuits of concern by circuit breakers, fuses or similar devices, or
2. Will allow propagation of the fire into the common enclosure."

Additionally, With respect to item b above, NEI 00-01 identifies a subset of components considered for spurious operation that involves reactor coolant pressure boundary (RCPB) components whose spurious operation can lead to an unacceptable loss of reactor pressure vessel/Reactor Coolant System (RPV/RCS) inventory via an interfacing system loss of coolant accident (ISLOCA). At CNP these "High/Low Pressure (HLP) interface" components are limited to the Residual Heat Removal (RHR) suction line motor operated valves (MOVs). These valves are subject to more stringent circuit analysis requirements and are kept closed (prefire condition) with the corresponding motor control center breakers in the open position. During the transition, this treatment will be carried forward which is in alignment with FAQ 06-006.

The CNP Methodology is consistent with the guidance provided in NEI 00-01, Section 3.1.

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

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NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref	**NEI 00-01 Section 3 Guidance**
3.1.1 Criteria/Assumptions	The following criteria and assumptions may be considered when identifying systems available and necessary to perform the required safe shutdown functions and combining these systems into safe shutdown paths.

Applicability	**Comments**
Not Applicable	No specific guidance provided.

Alignment Statement

Not Applicable

Alignment Basis

Refer to subsequent sections for specific guidance and alignment basis.

Reference Documents

Not Applicable

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NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref

3.1.1.1 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

[BWR] GE Report GE-NE-T43-00002-00-01-R01 entitled "Original Safe Shutdown Paths For The BWR" addresses the systems and equipment originally designed into the GE boiling water reactors (BWRs) in the 1960s and 1970s, that can be used to achieve and maintain safe shutdown per Section III.G.1 of 10CFR 50, Appendix R. Any of the shutdown paths (methods) described in this report are considered to be acceptable methods for achieving redundant safe shutdown.

Applicability

Not Applicable

Comments

DC Cook is a PWR

Alignment Statement

Not Applicable

Alignment Basis

Not Applicable

Reference Documents

Not Applicable

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref
3.1.1.2 Criteria/Assumptions

NEI 00-01 Section 3 Guidance
[BWR] GE Report GE-NE-T43-00002-00-03-R01 provides a discussion on the BWR Owners' Group (BWROG) position regarding the use of Safety Relief Valves (SRVs) and low pressure systems (LPCI/CS) for safe shutdown. The BWROG position is that the use of SRVs and low pressure systems is an acceptable methodology for achieving redundant safe shutdown in accordance with the requirements of 10CFR50 Appendix R Sections III.G.1 and III.G.2. The NRC has accepted the BWROG position and issued an SER dated Dec. 12, 2000.

Applicability
Not Applicable

Comments
DC Cook is a PWR

Alignment Statement
Not Applicable

Alignment Basis
Not Applicable

Reference Documents
Not Applicable

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref

3.1.1.3 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

[PWR] Generic Letter 86-10, Enclosure 2, Section 5.3.5 specifies that hot shutdown can be maintained without the use of pressurizer heaters (i.e., pressure control is provided by controlling the makeup/charging pumps). Hot shutdown conditions can be maintained via natural circulation of the RCS through the steam generators. The cool down rate must be controlled to prevent the formation of a bubble in the reactor head. Therefore, feedwater (either auxiliary or emergency) flow rates as well as steam release must be controlled.

Applicability

Applicable

Comments

The NFPA 805 requirement is to achieve "safe and stable state" versus the ability to " cooldown " to achieve cold shutdown.

Alignment Statement

Aligns

Alignment Basis

Reference: SSCA Section 2.3.4.2, "Reactor Coolant Makeup Control: Successful maintenance of RCS integrity is also necessary to achieve adequate inventory and pressure control. Procedural controls have been established to preclude or mitigate the inadvertent opening of boundary isolation valves such as the reactor head or Pressurizer vent valves, Pressurizer power-operated relief valves, and RHR suction isolation valves. Reactor coolant pump seal integrity is assured by not restoring seal injection after all seal cooling, including CCW Thermal Barrier Cooling, is lost due to a fire until RCS temperature is reduced to below 235°F. Control of Pressurizer water level is achieved manually by controlling CVCS injection charging flow based on Pressurizer level information."

Reference: SSCA, Section 2.3.4.3, "Overpressure protection of the RCS prior to a controlled cooldown and depressurization is provided by the Pressurizer safety valves. The Pressurizer PORVs are used to control plant pressure during the cooldown phase until RCS entry conditions are satisfied to place the Residual Heat Removal- (RHR) System in service."

Reference: SSCA, Section 2.3.5, Paragraph 5, "Immediately following the scram, the reactor is still generating significant decay heat, which will be relieved by operation of the steam generator safety relief valves or by the operator's use of the steam generator PORVs. To replace the mass lost from the steam generators, auxiliary feedwater is credited. Feed to each SG is normally controlled from the Control Room, but may be performed locally as well. At least two steam generators are required, and at least two (either 1 and 4 or 2 and 3) will always be available. Auxiliary feedwater must be established prior to the steam generators boiling dry."

Under Appendix R, Pressurizer Heaters are credited to ensure the ability to establish and maintain subcooling margin during the natural circulation cooldown phase without CRDM fans in operation.

As part of the NFPA 805 transition, several of the above systems and equipment (i.e., SG PORVs, Pressurizer PORVs and Heaters) are not required to

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NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

achieve initial safe and stable hot standby conditions. However, they are credited for use under sustain mode 3 operation and should the plant operating staff option to proceed and implement actions and/or repairs for the plant to transition to, and enter, Mode 4 (Hot Shutdown) and proceed to Mode 5 (Cold Shutdown) .

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

CSA Calculation AEP-CP-001, Rev 0

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NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref

3.1.1.4 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

The classification of shutdown capability as alternative shutdown is made independent of the selection of systems used for shutdown. Alternative shutdown capability is determined based on an inability to assure the availability of a redundant safe shutdown path. Compliance to the separation requirements of Sections III.G.1 and III.G.2 may be supplemented by the use of manual actions to the extent allowed by the regulations and the licensing basis of the plant, repairs (cold shutdown only), exemptions, deviations, GL 86-10 fire hazards analyses or fire protection design change evaluations, as appropriate. These may also be used in conjunction with alternative shutdown capability.

Applicability

Applicable

Comments

The classifications "Alternative Shutdown" and "cold shutdown" are not applicable to NFPA 805. The requirement under NFPA 805 is for the plant to achieve a "safe and stable state". Alternative Shutdown areas are transitioned using performanced based approach under NFPA 805.

Alignment Statement

Aligns

Alignment Basis

Reference: SSCA, Section 3.1, "For various CNP fire zones, compliance with the provisions of Section 111.G.2 cannot be effectively or economically achieved due to the configuration and congestion of safe shutdown equipment, cables, and associated circuits. For these areas, the appropriate technical approach necessary to comply with the provisions of Section III.G of Appendix R is to provide an alternative shutdown capability. The alternative shutdown method established for each specific analysis area provides the ability to achieve and maintain subcritical reactivity conditions in the reactor, maintain reactor coolant inventory, achieve and maintain hot standby conditions, and achieve cold shutdown conditions within 72 hours and maintain cold shutdown conditions thereafter."

The existing plant Alternative Shutdown Methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

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NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.1.1.5 Criteria/Assumptions	At the onset of the postulated fire, all safe shutdown systems (including applicable redundant trains) are assumed operable and available for post-fire safe shutdown. Systems are assumed to be operational with no repairs, maintenance, testing, Limiting Conditions for Operation, etc. in progress. The units are assumed to be operating at full power under normal conditions and normal lineups.

Applicability	Comments
Applicable	

Alignment Statement

Aligns

Alignment Basis

Reference: SSCA Sections 2.3.2."Initial Assumptions:
A. The unit is operating at 100% power upon the occurrence of a fire.
B. The reactor is tripped either manually or automatically.
C. No additional failures are considered other than the loss of offsite power (unless otherwise stated) and those directly attributable to the fife.
D. No piece of equipment required for safe shutdown is assumed to be out of service.
E. No concurrent or sequential design basis accidents or transients are assumed to occur."

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

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NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref

3.1.1.6 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

No Final Safety Analysis Report accidents or other design basis events (e.g. loss of coolant accident, earthquake), single failures or non-fire induced transients need be considered in conjunction with the fire.

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Reference: SSCA Section 2.1.1, "Design Basis Events: For the purpose of this review and report for which safe shutdown capability is demonstrated for CNP, the spectrum of postulated exposure fires in a given analysis area was analyzed involving in-situ combustibles which are external to any systems, structures, or components located in or adjacent to that area. The effects of such fires may adversely affect those systems, structures, or components essential to safe plant shutdown. No credit was taken for the availability of offsite power in order to achieve and maintain safe shutdown unless an analysis showed offsite power to be available. No concurrent or sequential design basis accidents or transients were assumed to exist. In addition, no random single failures were assumed to occur other than those which occur as a direct result of fire analysis assumptions."

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref

3.1.1.7 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

For the case of redundant shutdown, offsite power may be credited if demonstrated to be free of fire damage. Offsite power should be assumed to remain available for those cases where its availability may adversely impact safety (i.e., reliance cannot be placed on fire causing a loss of offsite power if the consequences of offsite power availability are more severe than its presumed loss). No credit should be taken for a fire causing a loss of offsite power. For areas where train separation cannot be achieved and alternative shutdown capability is necessary, shutdown must be demonstrated both where offsite power is available and where offsite power is not available for 72 hours.

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Reference: SSCA, Section 2.1.1, "No credit was taken for the availability of offsite power in order to achieve and maintain safe shutdown unless an analysis showed offsite power to be available."

Reference: SSCA, Section 3.1 Paragraphs 5, 6, 7, "The selected alternative shutdown method accommodates both conditions when offsite power is or is not available. The equipment and systems comprising the alternative shutdown method are capable of being powered by both onsite and offsite electrical power systems..."

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref
3.1.1.8 Criteria/Assumptions

NEI 00-01 Section 3 Guidance
Post-fire safe shutdown systems and components are not required to be safety-related.

Applicability
Applicable

Comments

Alignment Statement
Aligns

Alignment Basis
Reference: SSCA Section 5.9 indicates that the compliance strategy used for Appendix R was to select a minimum set of systems and components (safety and non-safety related) that could support safe shutdown and satisfy the functional requirements delineated in Appendix R.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents
Safe Shutdown Capability Assessment (SSCA) Rev 14

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref
3.1.1.9 Criteria/Assumptions

NEI 00-01 Section 3 Guidance
The post-fire safe shutdown analysis assumes a 72-hour coping period starting with a reactor scram/trip. Fire-induced impacts that provide no adverse consequences to hot shutdown within this 72-hour period need not be included in the post-fire safe shutdown analysis. At least one train can be repaired or made operable within 72 hours using onsite capability to achieve cold shutdown.

Applicability
Applicable

Comments
NFPA 805 requirement is to achieve "safe and stable state" versus the ability "to achieve and maintain cold shutdown within 72 hours".

Alignment Statement
Aligns

Alignment Basis
Under Appendix R (Reference: SSCA, Sections 2.3.1 & 4.0) a 72 hour coping period is specified and cold shutdown repairs may be credited where necessary to achieve long-term safe shutdown.

The existing CNP methodology is consistent with NEI 00-01 guidance. However, as pointed out in Section 4.2.1.2 of NFPA 805, given a fire, a plant is not required to transition to cold shutdown. During transition, the CNP fire area assessments documented the method of accomplishment of the NFPA 805 performance goals required to achieve and maintain safe and stable conditions (i.e., Hot Standby) versus the ability to achieve cold shutdown within 72 hours.

Reference Documents
Safe Shutdown Capability Assessment (SSCA) Rev 14

CSA Calculation AEP-CP-001, Rev 0

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NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref

3.1.1.1 Criteria/Assumptions 0

NEI 00-01 Section 3 Guidance

Manual initiation from the main control room or emergency control stations of systems required to achieve and maintain safe shutdown is acceptable where permitted by current regulations or approved by NRC; automatic initiation of systems selected for safe shutdown is not required but may be included as an option.

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Reference: SSCA, Section 2.4 identifies the systems credited for Safe shutdown following a fire. Manual initiation from the main control room or emergency control stations of components and systems is credited; automatic initiation of component and systems may be credited if properly analyzed.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref	**NEI 00-01 Section 3 Guidance**
3.1.1.1 Criteria/Assumptions 1	Where a single fire can impact more than one unit of a multi-unit plant, the ability to achieve and maintain safe shutdown for each affected unit must be demonstrated.

Applicability	**Comments**
Applicable	

Alignment Statement

Aligns

Alignment Basis

Reference: SSCA, Section 1.2, "...The automated analysis of the systems and components supporting Appendix R Safe Shutdown compliance identified multiple potential success paths for Hot Standby and Hot Shutdown/Cold Shutdown for both units based on the logic diagrams."

Reference: SSCA, Section 2.8, "...For zones that contain cables for both Unit 1 and Unit 2 the components and raceways were marked on the same set of physical location drawings so that the common effects of a single fire on both units would be readily apparent."

The potential effects of a fire on CNP Unit 1 and 2 are currently analyzed simultaneously within a safe shutdown analysis software/database for each Fire Area. This ensures that if a single fire impacts multiple units, the analyst will be required to understand and resolve impacts of the failures on each unit caused by the postulated fire.

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

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NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref	**NEI 00-01 Section 3 Guidance**
3.1.2 Shutdown Functions	The following discussion on each of these shutdown functions provides guidance for selecting the systems and equipment required for safe shutdown. For additional information on BWR system selection, refer to GE Report GENE-T43-00002-00-01-R01 entitled "Original Safe Shutdown Paths for the BWR."
Applicability	**Comments**
Not Applicable	No specific guidance provided.

Alignment Statement

Not Applicable

Alignment Basis

Refer to subsequent sections for specific guidance and alignment basis.

Reference Documents

Not Applicable

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref
3.1.2.1 Reactivity Control

NEI 00-01 Section 3 Guidance
[BWR] Control Rod Drive System

The safe shutdown performance and design requirements for the reactivity control function can be met without automatic scram/trip capability. Manual scram/reactor trip is credited. The post-fire safe shutdown analysis must only provide the capability to manually scram/trip the reactor.

Applicability
Not Applicable

Comments
DC Cook is a PWR

Alignment Statement
Not Applicable

Alignment Basis
Not Applicable

Reference Documents
Not Applicable

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref

3.1.2.1 Reactivity Control

NEI 00-01 Section 3 Guidance

[PWR] Makeup/Charging

There must be a method for ensuring that adequate shutdown margin is maintained by ensuring borated water is utilized for RCS makeup/charging.

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Reference: SSCA, Section 2.3.4.1, "Following rod insertion, subcritical conditions are achieved. The cooldown transition from hot standby to hot shutdown/cold shutdown requires additional boration to compensate for the moderator temperature coefficient. This additional boration will also compensate for xenon decay, which also results in positive reactivity addition. The chemical and volume control system (CVCS) is capable of injecting this quantity of borated water into the reactor coolant system and maintaining shutdown reactivity conditions throughout safe shutdown. This can be accomplished by charging borated water into the RCS from the RWST."

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref

3.1.2.2 Pressure Control Systems

NEI 00-01 Section 3 Guidance

[BWR] Safety Relief Valves (SRVs)

The SRVs are opened to maintain hot shutdown conditions or to depressurize the vessel to allow injection using low pressure systems. These are operated manually. Automatic initiation of the Automatic Depressurization System is not a required function.

Applicability

Not Applicable

Comments

DC Cook is a PWR

Alignment Statement

Not Applicable

Alignment Basis

Not Applicable

Reference Documents

Not Applicable

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref

3.1.2.2 Pressure Control Systems

NEI 00-01 Section 3 Guidance

[PWR] Makeup/Charging

RCS pressure is controlled by controlling the rate of charging/makeup to the RCS. Although utilization of the pressurizer heaters and/or auxiliary spray reduces operator burden, neither component is required to provide adequate pressure control. Pressure reductions are made by allowing the RCS to cool/shrink, thus reducing pressurizer level/pressure. Pressure increases are made by initiating charging/makeup to maintain pressurizer level/pressure. Manual control of the related pumps is acceptable.

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Reference: SSCA Section 2.3.4.2, "Reactor Coolant Makeup Control: Successful maintenance of RCS integrity is also necessary to achieve adequate inventory and pressure control. Procedural controls have been established to preclude or mitigate the inadvertent opening of boundary isolation valves such as the reactor head or Pressurizer vent valves, Pressurizer power-operated relief valves, and RHR suction isolation valves. Reactor coolant pump seal integrity is assured by not restoring seal injection after all seal cooling, including CCW Thermal Barrier Cooling, is lost due to a fire.... Control of Pressurizer water level is achieved manually by controlling CVCS injection charging flow based on Pressurizer level information."

Utilization of the pressurizer heaters and/or auxiliary spray is not required to provide adequate pressure control to achieve or maintain safe and stable hot standby conditions.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref
3.1.2.3 Inventory Control

NEI 00-01 Section 3 Guidance
[BWR] Systems selected for the inventory control function should be capable of supplying sufficient reactor coolant to achieve and maintain hot shutdown. Manual initiation of these systems is acceptable. Automatic initiation functions are not required.

Applicability
Not Applicable

Comments
DC Cook is a PWR

Alignment Statement
Not Applicable

Alignment Basis
Not Applicable

Reference Documents
Not Applicable

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref

3.1.2.3 Inventory Control

NEI 00-01 Section 3 Guidance

[PWR] Systems selected for the inventory control function should be capable of maintaining level to achieve and maintain hot shutdown. Typically, the same components providing inventory control are capable of providing pressure control. Manual initiation of these systems is acceptable. Automatic initiation functions are not required.

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Reference: SSCA Section 2.3.4.2, "Reactor coolant makeup control can be achieved by isolation of the normal and excess letdown CVCS paths and operation of the charging portion of the CVCS using the using the RCS BIT injection path, or the RCP seal injection path.... The isolation of normal and excess letdown require alignment of the RWST to the suction of the charging pump(s).... Control of Pressurizer water level is achieved manually be controlling CVCS injection charging flow based on Pressurizer level information."

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref
3.1.2.4 Decay Heat Removal

NEI 00-01 Section 3 Guidance
[BWR] Systems selected for the decay heat removal function(s) should be capable of:

- Removing sufficient decay heat from primary containment, to prevent containment over-pressurization and failure.

- Satisfying the net positive suction head requirements of any safe shutdown systems taking suction from the containment (suppression pool).

- Removing sufficient decay heat from the reactor to achieve cold shutdown.

This does not restrict the use of other systems.

Applicability
Not Applicable

Comments
DC Cook is a PWR

Alignment Statement
Not Applicable

Alignment Basis
Not Applicable

Reference Documents
Not Applicable

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref

3.1.2.4 Decay Heat Removal

NEI 00-01 Section 3 Guidance

[PWR] Systems selected for the decay heat removal function(s)) should be capable of:

- Removing sufficient decay heat from the reactor to reach hot shutdown conditions. Typically, this entails utilizing natural circulation in lieu of forced circulation via the reactor coolant pumps and controlling steam release via the Atmospheric Dump valves.

- Removing sufficient decay heat from the reactor to reach cold shutdown conditions.

This does not restrict the use of other systems.

Applicability

Applicable

Comments

NFPA 805 requirement is to achieve "safe and stable state" versus the ability "to reach cold shutdown conditions".

Alignment Statement

Aligns

Alignment Basis

Reference: SSCA Section 2.3.4.4, Reactor Heat Removal Function "Following a reactor trip with an assumed loss of offsite power, decay heat is initially removed by natural circulation within the reactor coolant system, heat transfer to the main steam system via the steam generators, and operation of the steam generator power-operated atmospheric relief valves (PORVs) or the main steam system code safety valves. With the steam generator safety valves alone, the RCS maintains itself close to the nominal no-load condition. For decay heat removal via natural circulation, a minimum of two steam generators will be available. This decay heat removal requires the ability to supply auxiliary feedwater to the steam generators to compensate for the inventory discharged as steam by the safety or relief valves. For maintenance of initial hot standby conditions, the secondary makeup flow required to the steam generators is less than the capacity of one motor-driven auxiliary feedpump (450 gpm) and is supplied by the auxiliary feedwater system (AFW). Auxiliary feedwater sources are available from the condensate storage tanks, and alternatively, from the essential service water system (ESW). Auxiliary feedwater may be supplied to the steam generators by the motor-driven auxiliary feedwater pumps (MDAFPs) or by the turbine-driven auxiliary feedwater pump (TDAFP)."

Although not required to achieve a safe and stable state (NFPA 805), the further removal of additional heat is achieved by the controlled operation of the steam generator power-operated atmospheric relief valve (PORV) and continued operation of the auxiliary feedwater system. The PORVs can be operated additionally in the event that control power is not available by utilizing the nitrogen supply valves to the respective steam generator's PORV. After reduction of reactor coolant system temperature and pressure below 350°F and 325 psig, respectively, the residual heat removal system is used to establish long-term core cooling through the removal of decay heat from the reactor coolant system to the environment via the residual heat removal system, component cooling water system, and the essential service water system."

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref

3.1.2.5 Process Monitoring

NEI 00-01 Section 3 Guidance

The process monitoring function is provided for all safe shutdown paths. IN 84-09, Attachment 1, Section IX "Lessons Learned from NRC Inspections of Fire Protection Safe Shutdown Systems (10CFR50 Appendix R)" provides guidance on the instrumentation acceptable to and preferred by the NRC for meeting the process monitoring function. This instrumentation is that which monitors the process variables necessary to perform and control the functions specified in Appendix R Section III.L.1. Such instrumentation must be demonstrated to remain unaffected by the fire. The IN 84-09 list of process monitoring is applied to alternative shutdown (III.G.3). IN 84-09 did not identify specific instruments for process monitoring to be applied to redundant shutdown (III.G.1 and III.G.2). In general, process monitoring instruments similar to those listed below are needed to successfully use existing operating procedures (including Abnormal Operating Procedures).

BWR

- Reactor coolant level and pressure
- Suppression pool level and temperature
- Emergency or isolation condenser level
- Diagnostic instrumentation for safe shutdown systems
- Level indication for tanks needed for safe shutdown

PWR

- Reactor coolant temperature (hot leg / cold leg)
- Pressurizer pressure and level
- Neutron flux monitoring (source range)
- Level indication for tanks needed for safe shutdown
- Steam generator level and pressure
- Diagnostic instrumentation for safe shutdown systems

The specific instruments required may be based on operator preference, safe shutdown procedural guidance strategy (symptomatic vs. prescriptive), and systems and paths selected for safe shutdown.

Applicability

Applicable

Comments

Additional diagnostic instruments were identified and analyzed as part of the transition to NFPA 805.

Alignment Statement

Aligns

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

Alignment Basis

Reference: SSCA Section 2.3.4.5, Process Monitoring Function "..source range detectors are available for core activity monitoring in the control room. An additional source range channel (N-23) has been added to a local shutdown indication (LSI) panel LSI-4 to provide this information for areas requiring alternative shutdown. Various process monitoring functions must be available to adequately achieve and maintain the reactor coolant makeup, pressure control and decay heat removal functions. For the assumed fire scenario, maintenance of hot standby requires that Pressurizer level and RCS pressure instrumentation be available. Reactor coolant system temperature is maintained during hot standby by proper decay heat removal via steam generators and self-actuation of the main steam code safety valves or controlled operation of the steam generator PORVs. In the natural circulation mode of operation, the following criteria are indicative of the existence of natural circulation:

a. Subcooling margin >220 F,
b. RCS temperature is stable or decreasing,
c. RCS pressure is stable or decreasing, and
d. RCS cold leg temperature (Tc) is at or near saturation for the main steam generator pressure

By monitoring RCS pressure and hot leg temperature (Th) instrumentation and by controlling plant depressurization and cooldown rates, operating personnel will maintain RCS pressure and assure that an adequate subcooling margin is achieved. Maintenance of Pressurizer level control is achieved by monitoring Pressurizer level instrumentation and maintaining manual control of CVCS charging flow.

Maintenance of hot standby also requires the control of the secondary system to compensate for variations in the primary system performance. Monitoring of steam generator level and pressure is available to assure adequate and controlled decay heat removal. The level control is achieved by operator manipulation of AFW system flow, based on steam generator level indication. Secondary system pressure will be monitored by steam generator pressure indication. The plant operator will utilize the instrumentation discussed above for monitoring of natural circulation conditions, subcooling margin, heat removal, and compliance with the plant's pressure/temperature limits as they pertain to the low temperature, overpressure protection of the reactor coolant system (cold leg temperature in conjunction with RCS pressure)."

The system descriptions within Section 2.4 of the SSCA identify the diagnostic instrumentation credited for each system. The availability of instrumentation on a fire area by fire area basis is demonstrated during the performance of the safe shutdown separation analysis. In general, CNP is consistent with the Process Monitoring guidance for PWRs as described in the NEI 00-01 guidance.

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref

3.1.2.6. Electrical Systems
1

NEI 00-01 Section 3 Guidance

AC Distribution System
Power for the Appendix R safe shutdown equipment is typically provided by a medium voltage system such as 4.16 KV Class 1E busses either directly from the busses or through step down transformers/load centers/distribution panels for 600, 480 or 120 VAC loads.

For redundant safe shutdown performed in accordance with the requirements of Appendix R Section III.G.1 and 2, power may be supplied from either offsite power sources or the emergency diesel generator depending on which has been demonstrated to be free of fire damage. No credit should be taken for a fire causing a loss of offsite power. Refer to Section 3.1.1.7.

DC Distribution System
Typically, the 125VDC distribution system supplies DC control power to various 125VDC control panels including switchgear breaker controls. The 125VDC distribution panels may also supply power to the 120VAC distribution panels via static inverters. These distribution panels typically supply power for instrumentation necessary to complete the process monitoring functions.

For fire events that result in an interruption of power to the AC electrical bus, the station batteries are necessary to supply any required control power during the interim time period required for the diesel generators to become operational.

Once the diesels are operational, the 125 VDC distribution system can be powered from the diesels through the battery chargers.

[BWR] Certain plants are also designed with a 250VDC Distribution System that supplies power to Reactor Core Isolation Cooling and/or High Pressure Coolant Injection equipment.

The DC control centers may also supply power to various small horsepower Appendix R safe shutdown system valves and pumps. If the DC system is relied upon to support safe shutdown without battery chargers being available, it must be verified that sufficient battery capacity exists to support the necessary loads for sufficient time (either until power is restored, or the loads are no longer required to operate).

Applicability

Applicable

Comments

Alignment Statement

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

Aligns

Alignment Basis

Reference: SSCA, Section 2.4.8, "Emergency Power System: The Plant emergency power system (EPS) includes an onsite, independent, automatically or manually starting emergency power source that supplies power to essential safe shutdown equipment if the normal offsite power sources are unavailable."

4160-V Emergency Power System: Each 4160-V diesel bus is fed from a 4.16-Kv diesel generator to supply power to the engineered safety features and other necessary equipment in the event of a loss of offsite power. There are two diesel generators associated with each unit. Each diesel generator is connected to two 4160-V buses.

Low Voltage Power System: The 600-V auxiliary system distributes power for all low voltage station service demands other than the Pressurizer heaters. The normal source of power for the 600-V system is the 4160-V system buses via the 4160/600-V transformers. The 600-V system is divided into six bus sections, four of which are safety buses, two for one safety train and two for the other.

120-Vac Vital Instrument Bus System: The 120-Vac vital instrument bus system consists of four separate vital buses per unit which are supplied by four independent 7.5-kVa, single-phase static inverters. Two of the inverters are connected to one of the unit batteries, the other two are connected to the second battery in the same unit. The input to each inverter is from a 600-V motor control center, or a 250-V unit battery. Alternative shutdown (LSI) instrumentation is fed directly from 120-Vac emergency shutdown distribution cabinets in either the fire-affected or alternatively from the unaffected unit.

250-VDC System: The 250-VDC system supplies power for operation of switchgear, vital bus inverters, power-operated valves, and control room emergency lighting. The battery system for each unit consists of two separately located sets of lead 'acid cells. Each battery has its own 'active normal charger and a standby charger. Following a loss of unit normal power, the battery charger's are energized from the emergency diesel generators. During normal operation the 250-Vdc load is fed from the battery chargers, with the batteries floating on the system. Upon loss of ac power, the entire dc load is drawn from the batteries. The loads powered from the battery include the diesel generator circuits, 4-kV switchgear, 600-V and 480-V load centers, electrically-operated valves, control room emergency lighting and vital bus inverters. The batteries are sized for 3 hours of operation after a loss of ac power, predicated upon the continuous operation of all dc emergency equipment. However, upon startup of the emergency diesel generator, the battery chargers are energized to take over the load and recharge their associated battery. "

The availability of the power system (including the availability of offsite power) on a fire area by fire area basis is demonstrated during the performance of the safe shutdown separation analysis.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref

3.1.2.6. Cooling Systems
2

NEI 00-01 Section 3 Guidance

Various cooling water systems may be required to support safe shutdown system operation, based on plant-specific considerations. Typical uses include:

- RHR/SDC/DH Heat Exchanger cooling water
- Safe shutdown pump cooling (seal coolers, oil coolers)
- Diesel generator cooling
- HVAC system cooling water.

HVAC Systems may be required to assure that safe shutdown equipment remains within its operating temperature range, as specified in manufacturer's literature or demonstrated by suitable test methods, and to assure protection for plant operations staff from the effects of fire (smoke, heat, toxic gases, and gaseous fire suppression agents). HVAC systems may be required to support safe shutdown system operation, based on plant-specific configurations. Typical uses include:

- Main control room, cable spreading room, relay room
- ECCS pump compartments
- Diesel generator rooms
- Switchgear rooms

Plant-specific evaluations are necessary to determine which HVAC systems are essential to safe shutdown equipment operation.

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

The various process cooling systems listed below support safe shutdown functions based on CNP specific considerations:

- Component Cooling Water (SSCA Section 3.2.4)
- Essential Service Water (SSCA Section 3.2.3)
- Emergency Power Supply (EDG) Cooling (SSCA Section 3.2.3)

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

HVAC Requirements (SSCA Section 2.4.9) indicates that HVAC systems associated with credited SSD equipment were evaluated. As a result the Engineered Safety Features Ventilation System, EDG Room HVAC, and Control Room Ventilation System were explicitly modeled. Additionally, as part of the NFPA 805 Transition, ESW Pump Room and Switchgear Room HVAC were explicitly model to determine their availability.

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.1.3 Methodology for Shutdown System Selection	Refer to hardcopy of NEI 00-01 Rev 1 Figure 3-2 for a flowchart illustrating the various steps involved in selecting safe shutdown systems and developing the shutdown paths. The following methodology may be used to define the safe shutdown systems and paths for an Appendix R analysis:

Applicability	Comments
Not Applicable	No specific guidance provided

Alignment Statement

Not Applicable

Alignment Basis

Refer to subsequent sections for specific guidance and alignment basis.

Reference Documents

Not Applicable

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.1.3.1 Identify Safe Shutdown Functions	Identify safe shutdown functions. Review available documentation to obtain an understanding of the available plant systems and the functions required to achieve and maintain safe shutdown. Documents such as the following may be reviewed: - Operating Procedures (Normal, Emergency, Abnormal) - System descriptions - Fire Hazard Analysis - Single-line electrical diagrams - Piping and Instrumentation Diagrams (P&IDs) - [BWR] GE Report GE-NE-T43-00002-00-01-R02 entitled "Original Shutdown Paths for the BWR"

Applicability	Comments
Applicable	

Alignment Statement

Aligns

Alignment Basis

The necessary documentation was reviewed in support of identifying the performance goals required to achieve and maintain safe shutdown.

Reference: SSCA, Section 2.5, "...For each system, plant flow diagrams, system descriptions, and one-line diagrams were used to identify' the precise primary flow paths and operational characteristics that must be established to accomplish the desired safe shutdown function."

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.1.3.2 Identify Combinations of Systems That Satisfy Each Safe Shutdown Function	Given the criteria/assumptions defined in Section 3.1.1, identify the available combinations of systems capable of achieving the safe shutdown functions of reactivity control, pressure control, inventory control, decay heat removal, process monitoring and support systems such as electrical and cooling systems (refer to Section 3.1.2). This selection process does not restrict the use of other systems. In addition to achieving the required safe shutdown functions, consider spurious operations and power supply issues that could impact the required safe shutdown function.

Applicability	Comments
Applicable	

Alignment Statement

Aligns

Alignment Basis

Reference: SSSA, Section 2.0, identifies the selection process for systems and components necessary for SSD and presents the methodology used for developing the SSD logic diagrams at the performance goal and system level. Specifically Section 2.2 States "Systems necessary to achieve the performance goals of Section III.L.2 of Appendix R were identified. The specific SSD functions necessary to satisfy the acceptance criteria of Appendix R are identified in Section 2.2 of the SSCA as reactivity control, reactor coolant makeup control, reactor coolant pressure control, reactor heat removal, process monitoring, and miscellaneous supporting functions. Refer to Section 2.0 of the SSCA for detailed descriptions of the SSD functional requirements."

Reference: SSCA, Section 2.3, "Various analytical approaches could be taken to assure that sufficient plant systems are available to perform the previously identified plant safety functions. Numerous plant systems are available, alone and in combination with other systems, to provide these required functions."

Reference: SSCA, Section 2.5, discusses the method of selection of safe shutdown components at CNP. For each system, plant flow diagrams, system descriptions, and one-line diagrams were used to identify the precise primary flow paths and operational characteristics that must be established to accomplish the desired safe shutdown function. From this information, a list was compiled of the components which are required in the system's performance of its safe shutdown function.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

Safe Shutdown Systems Analysis (SSSA) Rev 9

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref

3.1.3.3 Define Combination of Systems for Each Safe Shutdown Path

NEI 00-01 Section 3 Guidance

Select combinations of systems with the capability of performing all of the required safe shutdown functions and designate this set of systems as a safe shutdown path. In many cases, paths may be defined on a divisional basis since the availability of electrical power and other support systems must be demonstrated for each path. During the equipment selection phase, identify any additional support systems and list them for the appropriate path.

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Different combinations of systems that successfully perform the safe shutdown functions are illustrated on the logic diagrams in SSSA, Attachments 2 and in Safe Shutdown Analysis Software (SAFE). The various combinations can be achieved by choosing different logical branches that satisfy a particular safe shutdown function. Support systems for particular components are included in the logic diagrams.

Reference: SSSA, Section 2.0, identifies the selection process for systems and components necessary for SSD and presents the methodology used for developing the SSD logic diagrams.

Reference: SSSA, Section 4.1.1.2, "Development of the SAFE Logics: The existing analysis was reviewed to model in SAFE the various systems credited for achieving safe shutdown following a fire. System Logics identify the main equipment that comprises a safe shutdown system operating in its desired mode to support safe shutdown of the plant under post-fire conditions. Equipment Logics identify the relationship between main equipment utilized in the system logics and other (support) equipment(s) (i.e., power supplies, solenoid valves, etc.) whose proper operation is essential to the achievement of the main equipment's safe shutdown function."

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.1.3.4 Assign Shutdown Paths to Each Combination of Systems	Assign a path designation to each combination of systems. The path will serve to document the combination of systems relied upon for safe shutdown in each fire area. Refer to Attachment 1 to this document for an example of a table illustrating how to document the various combinations of systems for selected shutdown paths.

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Reference: SSSA, Section 2.0, identifies the selection process for systems and components necessary for SSD and presents the methodology used for developing the SSD logic diagrams. An automated analysis of the systems and components supporting Appendix R Safe Shutdown compliance identified multiple potential success paths for Hot Standby and Hot Shutdown/Cold Shutdown for both units based on the logic diagrams.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

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NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.2 Safe Shutdown Equipment Selection	The previous section described the methodology for selecting the systems and paths necessary to achieve and maintain safe shutdown for an exposure fire event (see Section 5.0 DEFINITIONS for "Exposure Fire"). This section describes the criteria/assumptions and selection methodology for identifying the specific safe shutdown equipment necessary for the systems to perform their Appendix R function. The selected equipment should be related back to the safe shutdown systems that they support and be assigned to the same safe shutdown path as that system. The list of safe shutdown equipment will then form the basis for identifying the cables necessary for the operation or that can cause the maloperation of the safe shutdown systems.

Applicability	Comments
Applicable	

Alignment Statement

Aligns

Alignment Basis

Reference: SSCA, Section 2.5, Discusses the method of selection of safe shutdown components at CNP. "For each system, plant flow diagrams, system descriptions, and one-line diagrams were used to identify the precise primary flow paths and operational characteristics that must be established to accomplish the desired safe shutdown function. From this information, a list was compiled of the components which are required in the system's performance of its safe shutdown function... From the analysis of the safe shutdown system flow paths, those components whose spurious operation would threaten safe shutdown system operability were also identified. This identification included those branch flow paths that must be isolated and remain isolated to assure that flow will not be substantially diverted from the primary flow path. The combination of spurious components and safe shutdown components are considered to be the required components necessary to achieve safe shutdown of the CNP. A list was generated for safe shutdown devices including device identification, normal operating status, operating requirements for the various shutdown stages (hot standby, hot shutdown and cold shutdown), required supporting services, and plant location."

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref	**NEI 00-01 Section 3 Guidance**
3.2.1 Criteria/Assumptions	Consider the following criteria and assumptions when identifying equipment necessary to perform the required safe shutdown functions:

Applicability	**Comments**
Not Applicable	No specific guidance provided.

Alignment Statement

Not Applicable

Alignment Basis

Refer to subsequent sections for specific guidance and alignment basis.

Reference Documents

Not Applicable

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref

3.2.1.1 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

Safe shutdown equipment can be divided into two categories. Equipment may be categorized as (1) primary components or (2) secondary components. Typically, the following types of equipment are considered to be primary components:

- Pumps, motor operated valves, solenoid valves, fans, gas bottles, dampers, unit coolers, etc.

- All necessary process indicators and recorders (i.e., flow indicator, temperature indicator, turbine speed indicator, pressure indicator, level recorder)

- Power supplies or other electrical components that support operation of primary components (i.e., diesel generators, switchgear, motor control centers, load centers, power supplies, distribution panels, etc.).

Secondary components are typically items found within the circuitry for a primary component. These provide a supporting role to the overall circuit function. Some secondary components may provide an isolation function or a signal to a primary component via either an interlock or input signal processor. Examples of secondary components include flow switches, pressure switches, temperature switches, level switches, temperature elements, speed elements, transmitters, converters, controllers, transducers, signal conditioners, hand switches, relays, fuses and various instrumentation devices.

Determine which equipment should be included on the Safe Shutdown Equipment List (SSEL). As an option, include secondary components with a primary component(s) that would be affected by fire damage to the secondary component. By doing this, the SSEL can be kept to a manageable size and the equipment included on the SSEL can be readily related to required post-fire safe shutdown systems and functions.

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Reference: SSSA, Section 2.2, "...Flowpaths were identified within these systems (primary paths and diversion paths) which further define the SSD systems/components required to support the performance goals. Components were identified within the systems that are required to satisfy the Appendix R acceptance criteria. Equipment required to operate, as well as equipment whose spurious operation could adversely affect SSD, were identified. Control

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

panels, such as local shutdown indication (LSI) or the steam generator Panel for SG PORVs are identified as SSD components, but the instruments and cables were analyzed separately. Manual valves that may require repositioning following a postulated fire (i.e., the CVCS cross-tie valves) were included on the SSD component list and logic diagrams. Passive components, such as tanks and heat exchangers, may or may not be listed as SSD components, however all valves required to place or maintain a required tank or heat exchanger in service are included on the SSD component list and logic diagrams."

Reference: SSCA, Section 2.5, Discusses the method of selection of safe shutdown components at CNP. For each system, plant flow diagrams, system descriptions, and one-line diagrams were used to identify the precise primary flow paths and operational characteristics that must be established to accomplish the desired safe shutdown function. From this information, a list was compiled of the components which are required in the system's performance of its safe shutdown function. A. Active components that need to be powered to establish, or assist in establishing, the primary flow path and/or the system's operation. B. Active components in the primary flow path that normally are in the proper position whose power loss will not result in a change of position, but may be affected by circuit faults in control or power cabling. C. Power-operated components that need to change position to establish or assist in establishing the primary flow path, whose loss of electrical or air supplies result in the component adopting the required safe shutdown position but which may be affected by circuit faults in control or power cabling. D. Major mechanical components that support safe shutdown (heat exchangers and storage tanks), and other passive components necessary to perform the required safe shutdown functions.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

Safe Shutdown Capability Assessment (SSCA) Rev 14

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NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.2.1.2 Criteria/Assumptions	Assume that exposure fire damage to manual valves and piping does not adversely impact their ability to perform their pressure boundary or safe shutdown function (heat sensitive piping materials, including tubing with brazed or soldered joints, are not included in this assumption). Fire damage should be evaluated with respect to the ability to manually open or close the valve should this be necessary as a part of the post-fire safe shutdown scenario.

Applicability	Comments
Applicable	

Alignment Statement

Aligns

Alignment Basis

Reference: Procedure 12-EHP-2270-SSA-001, Section 3.5.1.h.2 states the following with respect to fire damage to manual valves:

"Manual valves are assumed to remain in their pre-fire position; therefore, they are not considered in the assessment unless credited as a compliance strategy. Basis: No motive power is provided to reposition these valves."

The feasibility of operator manual actions to reposition manual valves is required to be evaluated, where credited.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Analysis Update, 12-EHP-2270-SSA-001, Rev 1

CNP Technical Evaluation 12.7 Rev 5, "Safe Shutdown Manual Action Feasibility Study"

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NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.2.1.3 Criteria/Assumptions	Assume that manual valves are in their normal position as shown on P&IDs or in the plant operating procedures.

Applicability
Applicable

Comments

Alignment Statement
Aligns

Alignment Basis
Reference: SSSA, Section 2.2 indicates that passive mechanical equipment, such as manual valves that are in their desired position when the plant is operating at full power, may not be included in the SSEL. Therefore, it is assumed that manual valves are in the positions indicated on P&IDs or in other plant documentation, with the plant in normal alignment and at full power prior to the onset of the fire.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents
Safe Shutdown Systems Analysis (SSSA) Rev 9

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.2.1.4 Criteria/Assumptions	Assume that a check valve closes in the direction of potential flow diversion and seats properly with sufficient leak tightness to prevent flow diversion. Therefore, check valves do not adversely affect the flow rate capability of the safe shutdown systems being used for inventory control, decay heat removal, equipment cooling or other related safe shutdown functions.

Applicability	Comments
Applicable	

Alignment Statement

Aligns

Alignment Basis

Reference: Procedure 12-EHP-2270-SSA-001, Section 3.5.1.h.1 states "Piping, check valves, strainers, tanks, heat exchangers, safety relief valves, and pressure vessels are assumed to remain functional during and after a fire. Basis: The substantial nature of the above components is sufficient to assure that they will remain functional in a fire."

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Analysis Update, 12-EHP-2270-SSA-001, Rev 1

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref

3.2.1.5 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

Instruments (e.g., resistance temperature detectors, thermocouples, pressure transmitters, and flow transmitters) are assumed to fail upscale, midscale, or downscale as a result of fire damage, whichever is worse. An instrument performing a control function is assumed to provide an undesired signal to the control circuit.

Applicability

Applicable

Comments

Alignment Statement

Aligns with Intent

Alignment Basis

Reference: 12-EHP-2700-SSA-004, Section 3.4.3.b addresses the undesirable effects of fire on instrumentation circuits as follows:

"1. Instrumentation that provides a credited control function interlock for safe shutdown equipment may be identified as a required SSD component and its relationship to the equipment will be depicted on the safe shutdown logic diagrams. All cables associated with the instrument that could suffer fire induced damage and adversely affect the interlocked SSD component's ability to perform its safe shutdown function must be included with the SSD component.

2. Instrumentation which does not provide a credited control function, but whose spurious operation could adversely affect safe shutdown, may be considered required safe shutdown components. Examples include instrumentation involved in the initiation of the Engineered Safety Features Actuation System. The population of cables that are involved with the automatic initiation of such control systems will be identified in the safe shutdown analysis."

The existing CNP methodology meets the intent of the NEI 00-01 guidance.

Reference Documents

Safe Shutdown Cable and Associated Circuit Analysis, 12-EHP-2700-SSA-004, Rev 2

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref

3.2.1.6 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

Identify equipment that could spuriously operate or mal-operate and impact the performance of equipment on a required safe shutdown path during the equipment selection phase. Consider Bin 1 of RIS 2004-03 during the equipment identification process.

Applicability

Applicable

Comments

RIS 2004-03 Bin 1 was reviewed during a CNP Fire Protection Self Assessment but the RIS was not considered as a basis document for component / cable selection process as part of transition to the NFPA 805 Licensing Basis.

Alignment Statement

Aligns

Alignment Basis

Reference: SSSA, Section 2.2 specifies that equipment required to operate, as well as equipment whose spurious operation could adversely affect SSD, were identified. "Systems necessary to achieve the performance goals of Section III.L.2 of Appendix R were identified. The specific SSD functions necessary to satisfy the acceptance criteria of Appendix R are identified in Section 2.2 of the SSCA as reactivity control, reactor coolant makeup control, reactor coolant pressure control, reactor heat removal, process monitoring, and miscellaneous supporting functions. Refer to Section 2.0 of the SSCA for detailed descriptions of the SSD functional requirements. Flowpaths were identified within these systems (primary paths and diversion paths) which further define the SSD systems/components required to support the performance goals. Components were identified within the systems that are required to satisfy the Appendix R acceptance criteria. Equipment required to operate, as well as equipment whose spurious operation could adversely affect SSD, were identified."

Reference: SSCA Section 2.5 specifies that from the analysis of the safe shutdown system flow paths, those components whose spurious operation would threaten safe shutdown system operability were also identified.

The analysis of Multiple Spurious Operations (MSOs) has been included as part of transition to NFPA 805

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

CNP Fire Protection Self-Assessment, Assessment No. SA2005-DEM-001-P, September 2005, "RIS 2004-03, Circuit Failures"

Safe Shutdown Systems Analysis (SSSA) Rev 9

Safe Shutdown Capability Assessment (SSCA) Rev 14

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref

3.2.1.7 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

Identify instrument tubing that may cause subsequent effects on instrument readings or signals as a result of fire. Determine and consider the fire area location of the instrument tubing when evaluating the effects of fire damage to circuits and equipment in the fire area.

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Per Procedure 12-EHP-2270-SSA-001, Section 3.5.1.h.3 "Instrumentation located in the area of concern is not credited in the event of a fire (without additional review or analysis)."

As part of the NFPA 805 Transition, the impact of fire on instrument tubing sense lines was evaluated considering the fire area location of the instrument sense lines. The sense lines for the applicable process monitoring instruments are included in the NSCA model, and evaluated similar to a cable, such that the instrument is assumed to fail in areas containing its associated tubing unless an evaluation notes otherwise. The sense lines for applicable process monitoring instruments are welded steel therefore, the pressure boundary will not be breached as a result of fire damage.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Analysis Update, 12-EHP-2270-SSA-001, Rev 1

CNP Engineering Specification ES-PIPE-1013-QCN, Rev 3

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.2.2 Methodology for Equipment Selection	Refer to NEI 00-01 Rev 1 Figure 3-3 for a flowchart illustrating the various steps involved in selecting safe shutdown equipment. Use the following methodology to select the safe shutdown equipment for a post-fire safe shutdown analysis: [Refer to hardcopy of NEI 00-01 for Figure]

Applicability	Comments
Applicable	No specific guidance provided

Alignment Statement

Not Applicable

Alignment Basis

Refer to subsequent sections for specific guidance and alignment basis.

Reference Documents

Not Applicable

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref

3.2.2.1 Identify the System Flow Path for Each Shutdown Path

NEI 00-01 Section 3 Guidance

Mark up and annotate a P&ID to highlight the specific flow paths for each system in support of each shutdown path. Refer to Attachment 2 for an example of an annotated P&ID illustrating this concept.

[Refer to hardcopy of NEI 00-01 for Attachment 2]

Applicability

Applicable

Comments

Alignment Statement

Aligns with Intent

Alignment Basis

Reference: SSCA, Section 2.5, "For each system, plant flow diagrams, system descriptions, and one-line diagrams were used to identify the precise primary flow paths and operational characteristics that must be established to accomplish the desired safe shutdown function. From this information, a list was compiled of the components which are required in the system's performance of its safe shutdown function."

Therefore, the existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.2.2.2 Identify the Equipment in Each Safe Shutdown System Flow Path Including Equipment That May Spuriously Operate and Affect System Operation	Review the applicable documentation (e.g. P&IDs, electrical drawings, instrument loop diagrams) to assure that all equipment in each system's flow path has been identified. Assure that any equipment that could spuriously operate and adversely affect the desired system function(s) is also identified. If additional systems are identified which are necessary for the operation of the safe shutdown system under review, include these as systems required for safe shutdown. Designate these new systems with the same safe shutdown path as the primary safe shutdown system under review (Refer to Figure 3-1). [Refer to hardcopy of NEI 00-01 for Figure]

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Reference: SSCA Section 2.5, "For each system, plant flow diagrams, system descriptions, and one-line diagrams were used to identify the precise primary flow paths and operational characteristics that must be established to accomplish the desired safe shutdown function. From this information, a list was compiled of the components which are required in the system's performance of its safe shutdown function."

Reference: SSSA, Section 2.2, "Flowpaths were identified within these systems (primary paths and diversion paths) which further define the SSD systems/components required to support the performance goals. Components were identified within the systems that are required to satisfy the Appendix R acceptance criteria. Equipment required to operate, as well as equipment whose spurious operation could adversely affect SSD, were identified."

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

Safe Shutdown Capability Assessment (SSCA) Rev 14

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.2.2.3 Develop a List of Safe Shutdown Equipment and Assign the corresponding System and Safe Shutdown Path(s) Designation to Each	Prepare a table listing the equipment identified for each system and the shutdown path that it supports. Identify any valves or other equipment that could spuriously operate and impact the operation of that safe shutdown system. Assign the safe shutdown path for the affected system to this equipment. During the cable selection phase, identify additional equipment required to support the safe shutdown function of the path (e.g., electrical distribution system equipment). Include this additional equipment in the safe shutdown equipment list. Attachment 3 to this document provides an example of a (SSEL). The SSEL identifies the list of equipment within the plant considered for safe shutdown and it documents various equipment-related attributes used in the analysis. [Refer to hardcopy of NEI 00-01 for Attachment 3]

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Reference: SSCA, Section 2.5, "For each system, plant flow diagrams, system descriptions, and one-line diagrams were used to identify the precise primary flow paths and operational characteristics that must be established to accomplish the desired safe shutdown function. From this information, a list was compiled of the components which are required in the system's performance of its safe shutdown function."

Reference: SSCA, Section 2.7, "The safe shutdown component list developed for CNP includes the minimum components required to protect the safe shutdown capability from the exposure fire damage postulated in Appendix R."

Reference: SSSA, Section 2.2, "Flowpaths were identified within these systems (primary paths and diversion paths) which further define the SSD systems/components required to support the performance goals. Components were identified within the systems that are required to satisfy the Appendix R acceptance criteria. Equipment required to operate, as well as equipment whose spurious operation could adversely affect SSD, were identified."

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

Safe Shutdown Capability Assessment (SSCA) Rev 14

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref

3.2.2.4 Identify Equipment Information Required for the Safe Shutdown Analysis

NEI 00-01 Section 3 Guidance

Collect additional equipment-related information necessary for performing the post-fire safe shutdown analysis for the equipment. In order to facilitate the analysis, tabulate this data for each piece of equipment on the SSEL. Refer to Attachment 3 to this document for an example of a SSEL. Examples of related equipment data should include the equipment type, equipment description, safe shutdown system, safe shutdown path, drawing reference, fire area, fire zone, and room location of equipment. Other information such as the following may be useful in performing the safe shutdown analysis: normal position, hot shutdown position, cold shutdown position, failed air position, failed electrical position, high/low pressure interface concern, and spurious operation concern.

[Refer to hardcopy of NEI 00-01 for Attachment 3]

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Reference: SSCA Sections 2.5 through 2.8 specify the data included in the SSEL for each piece of equipment required to perform the safe shutdown analysis.

Reference: SSCA, Section 2.6, "A list was generated for safe shutdown devices including device identification, normal operating status, operating requirements for the various shutdown stages (hot standby, hot shutdown and cold shutdown), required supporting services, and plant location."

Reference: SSSA Section 1.3, "Key information such as component number, component descriptions, cable number, fire zone locations, analysis area, locations, logic drawing numbers, and cable fault consequence were entered into the SAFE database."

In general, the information identified in Attachment 3 of NEI 00-01 is captured in the SAFE Database. The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

Safe Shutdown Capability Assessment (SSCA) Rev 14

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.1 Nuclear Safety Capability Systems and Equipment Selection

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.2.2.5 Identify Dependencies Between Equipment, Supporting Equipment, Safe Shutdown Systems and Safe Shutdown Paths	In the process of defining equipment and cables for safe shutdown, identify additional supporting equipment such as electrical power and interlocked equipment. As an aid in assessing identified impacts to safe shutdown, consider modeling the dependency between equipment within each safe shutdown path either in a relational database or in the form of a Safe Shutdown Logic Diagram (SSLD). Attachment 4 provides an example of a SSLD that may be developed to document these relationships. [Refer to hardcopy of NEI 00-01 for Attachment 4]

Applicability	Comments
Applicable	

Alignment Statement

Aligns

Alignment Basis

Reference: SSSA, Section 4.1.1.2, "Development of the SAFE Logics: Equipment Logics identify the relationship between main equipment utilized in the system logics and other (support) equipment(s) (i.e., power supplies, solenoid valves, etc.) whose proper operation is essential to the achievement of the main equipment's safe shutdown function."

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

2.4.2.2.1 Circuits Required in Nuclear Safety Functions. Circuits required for the nuclear safety functions shall be identified. This includes circuits that are required for operation, that could prevent the operation, or that result in the maloperation of the equipment identified in 2.4.2.1. This evaluation shall consider fire-induced failure modes such as hot shorts (external and internal), open circuits, and shorts to ground, to identify circuits that are required to support the proper operation of components required to achieve the nuclear safety performance criteria, including spurious operation and signals. This will ensure that a comprehensive population of circuitry is evaluated.

2.4.2.2.2 Other Required Circuits. Other circuits that share common power supply and/or common enclosure with circuits required to achieve nuclear safety performance criteria shall be evaluated for their impact on the ability to achieve nuclear safety performance criteria.

(a) Common Power Supply Circuits. Those circuits whose fire-induced failure could cause the loss of a power supply required to achieve the nuclear safety performance criteria shall be identified. This situation could occur if the upstream protection device (i.e., breaker or fuse) is not properly coordinated with the downstream protection device.

(b) Common Enclosure Circuits. Those circuits that share enclosures with circuits required to achieve the nuclear safety performance criteria and whose fire-induced failure could cause the loss of the required components shall be identified. The concern is that the effects of a fire can extend outside of the immediate fire area due to fire-induced electrical faults on inadequately protected cables or via inadequately sealed fire area boundaries.

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.3 Safe Shutdown Cable Selection and Location	This section provides industry guidance on the recommended methodology and criteria for selecting safe shutdown cables and determining their potential impact on equipment required for achieving and maintaining safe shutdown of an operating nuclear power plant for the condition of an exposure fire. The Appendix R safe shutdown cable selection criteria are developed to ensure that all cables that could affect the proper operation or that could cause the maloperation of safe shutdown equipment are identified and that these cables are properly related to the safe shutdown equipment whose functionality they could affect. Through this cable-to-equipment relationship, cables become part of the safe shutdown path assigned to the equipment affected by the cable.

Applicability	Comments
Applicable	No specific guidance provided

Alignment Statement

Not Applicable

Alignment Basis

Refer to subsequent sections for specific guidance and alignment basis.

Reference Documents

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

Not Applicable

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref

3.3.1 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

To identify an impact to safe shutdown equipment based on cable routing, the equipment must have cables that affect it identified. Carefully consider how cables are related to safe shutdown equipment so that impacts from these cables can be properly assessed in terms of their ultimate impact on safe shutdown system equipment.

Consider the following criteria when selecting cables that impact safe shutdown equipment:

Applicability

Applicable

Comments

No specific guidance provided

Alignment Statement

Not Applicable

Alignment Basis

Refer to subsequent sections for specific guidance and alignment basis.

Reference Documents

Not Applicable

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref

3.3.1.1 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

The list of cables whose failure could impact the operation of a piece of safe shutdown equipment includes more than those cables connected to the equipment. The relationship between cable and affected equipment is based on a review of the electrical or elementary wiring diagrams. To assure that all cables that could affect the operation of the safe shutdown equipment are identified, investigate the power, control, instrumentation, interlock, and equipment status indication cables related to the equipment. Consider reviewing additional schematic diagrams to identify additional cables for interlocked circuits that also need to be considered for their impact on the ability of the equipment to operate as required in support of postfire safe shutdown. As an option, consider applying the screening criteria from Section 3.5 as a part of this section. For an example of this see Section 3.3.1.4.

Applicability

Applicable

Comments

Under Appendix R, CNP credited a "double break" design philosophy that although approved by NRC [in the Alternative Shutdown Capability Safety Evaluation dated November 22, 1983] will not be carried forward as part of the transition to the new licensing basis. Cable selection has been completed for all passive "double break" valves to support circuit analysis consistent with industry testing and NFPA 805 expectations. Circuit failures identified as a result of inclusion of new cables added to the NFPA 805 analysis have been capture and addressed using risk-informed, performance-based techniques.

Alignment Statement

Aligns

Alignment Basis

Reference: Procedure 12-EHP-2270-SSA-004 describes the process used at CNP necessary to assure that all cables that could affect the operation of the safe shutdown equipment are identified. Section 3.4, Cable Fault Analysis, requires reviews of elementary diagram and associated wiring diagram(s) to identify fire induced fault consequences on the component in question. Guidance is provided for interlocks, instrumentation, motor control centers, and switchgear circuits. Cables external to the component's control circuit were included if any of the identified cable faults can adversely affect the SSD component being analyzed.

The existing CNP methodology is in alignment with NEI 00-01 guidance

Reference Documents

Safe Shutdown Cable and Associated Circuit Analysis, Procedure 12-EHP-2270-SSA-004, Rev. 2

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref

3.3.1.2 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

In cases where the failure (including spurious actuations) of a single cable could impact more than one piece of safe shutdown equipment, include the cable with each piece of safe shutdown equipment.

Applicability

Applicable

Comments

Under Appendix R, CNP credited a "double break" design philosophy that although approved by NRC [in the Alternative Shutdown Capability Safety Evaluation dated November 22, 1983] will not be carried forward as part of the transition to the new licensing basis. Cable selection has been completed for all passive "double break" valves to support circuit analysis consistent with industry testing and NFPA 805 expectations. Circuit failures identified as a result of inclusion of new cables added to the NFPA 805 analysis have been capture and addressed using risk-informed, performance-based techniques.

Alignment Statement

Aligns

Alignment Basis

Reference: Procedure 12-EHP-2270-SSA-004 describes the process used at CNP necessary to ensure that all cables that could affect the operation of the safe shutdown equipment are identified. This includes spurious actuations (failure) of a single cable impacting more than one piece of safe shutdown equipment. Cables external to the component's control circuit are also included if any of the identified cable faults can adversely affect the SSD component being analyzed.

Reference: SSSA, Section 3.1, "The SSD component list and logic diagrams provide the initial data used to identify the required electrical circuits to be analyzed. To ensure adequate equipment performance, each component was evaluated to identify the circuits and cables required to support component/system operation. These included power (4160 VAC, 600 VAC, 480 VAC, and 250 VDC), control (110 VAC, 220 VAC, and 250 VDC), and instrumentation. In addition, the SSD circuit analysis identified associated circuits and the resolutions to prevent and/or defeat the adverse consequences to SSD system operation caused by associated circuit maloperations due to a fire. Each component was analyzed to determine the operational conditions required for that component during various phases of SSD. Cables required to ensure adequate system and equipment performance during SSD were also analyzed."

Reference Documents

Safe Shutdown Cable and Associated Circuit Analysis, Procedure 12-EHP-2270-SSA-004, Rev. 2

Safe Shutdown Systems Analysis (SSSA) Rev 9

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref	**NEI 00-01 Section 3 Guidance**
3.3.1.3 Criteria/Assumptions	Electrical devices such as relays, switches and signal resistor units are considered to be acceptable isolation devices. In the case of instrument loops, review the isolation capabilities of the devices in the loop to determine that an acceptable isolation device has been installed at each point where the loop must be isolated so that a fault would not impact the performance of the safe shutdown instrument function.
Applicability	**Comments**
Applicable	

Alignment Statement

Aligns

Alignment Basis

Reference: Procedure 12-EHP-2270-SSA-004, Attachment 1 provides instruction and considerations regarding instrumentation loops including review of isolation devices to determine that a fault within instrumentation loop circuitry does not impact performance of credited instruments function.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Cable and Associated Circuit Analysis, Procedure 12-EHP-2270-SSA-004, Rev. 2

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref
3.3.1.4 Criteria/Assumptions

NEI 00-01 Section 3 Guidance
Screen out cables for circuits that do not impact the safe shutdown function of a component (i.e., annunciator circuits, space heater circuits and computer input circuits) unless some reliance on these circuits is necessary. However, they must be isolated from the component's control scheme in such a way that a cable fault would not impact the performance of the circuit.

Applicability
Applicable

Comments

Alignment Statement
Aligns

Alignment Basis
Reference: Procedure 12-EHP-2270-SSA-004, Attachments 1 - 4 provide instructions for screening cables that will not prevent the equipment from performing its safe shutdown function including annunciator, ammeter, voltmeter, space heaters, computer input, etc.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents
Safe Shutdown Cable and Associated Circuit Analysis, Procedure 12-EHP-2270-SSA-004, Rev. 2

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref

3.3.1.5 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

For each circuit requiring power to perform its safe shutdown function, identify the cable supplying power to each safe shutdown and/or required interlock component. Initially, identify only the power cables from the immediate upstream power source for these interlocked circuits and components (i.e., the closest power supply, load center or motor control center). Review further the electrical distribution system to capture the remaining equipment from the electrical power distribution system necessary to support delivery of power from either the offsite power source or the emergency diesel generators (i.e., onsite power source) to the safe shutdown equipment. Add this equipment to the safe shutdown equipment list. Evaluate the power cables for this additional equipment for associated circuits concerns.

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Reference: Procedure 12-EHP-2270-SSA-004 describes the process used at CNP necessary to ensure that all cables that could affect the operation of the safe shutdown equipment are identified. This includes an iterative process for identifying the cable supplying power to each safe shutdown and/or required interlock component.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Cable and Associated Circuit Analysis, Procedure 12-EHP-2270-SSA-004, Rev. 2

Safe Shutdown Systems Analysis (SSSA) Rev 9

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref

3.3.1.6 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

The automatic initiation logics for the credited post-fire safe shutdown systems are not required to support safe shutdown. Each system can be controlled manually by operator actuation in the main control room or emergency control station. If operator actions outside the MCR are necessary, those actions must conform to the regulatory requirements on manual actions. However, if not protected from the effects of fire, the fire-induced failure of automatic initiation logic circuits must not adversely affect any post-fire safe shutdown system function.

Applicability

Applicable

Comments

Pre-transition operator actions will be transitioned as recovery actions consistent approved guidance set forth in NEI 04-02 and applicable FAQs.

Alignment Statement

Aligns

Alignment Basis

Automatic initiation logics for the credited post-fire safe shutdown systems are not required to support safe shutdown. Procedure 12-EHP-2270-SSA-004 considers that the spurious operation of automatic initiation logics could adversely affect safe shutdown and provides instruction to include the applicable population of those cables that are involved with the automatic initiation of such control systems in the safe shutdown analysis.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Cable and Associated Circuit Analysis, Procedure 12-EHP-2270-SSA-004, Rev. 2

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref

3.3.1.7 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

Cabling for the electrical distribution system is a concern for those breakers that feed associated circuits and are not fully coordinated with upstream breakers. With respect to electrical distribution cabling, two types of cable associations exist. For safe shutdown considerations, the direct power feed to a primary safe shutdown component is associated with the primary component. For example, the power feed to a pump is necessary to support the pump. Similarly, the power feed from the load center to an MCC supports the MCC. However, for cases where sufficient branch-circuit coordination is not provided, the same cables discussed above would also support the power supply. For example, the power feed to the pump discussed above would support the bus from which it is fed because, for the case of a common power source analysis, the concern is the loss of the upstream power source and not the connected load. Similarly, the cable feeding the MCC from the load center would also be necessary to support the load center.

Applicability

Applicable

Comments

Alignment Statement

Aligns with Intent

Alignment Basis

Reference: SSCA, Section 2.7.2, "Electrical circuit fault protection was originally designed to provide protection for plant electric circuits via protective relaying, circuit breakers, and fuses. This protective equipment was designed and applied to ensure adequate protection of all electrical distribution equipment, including cables, from electric faults and overload conditions in the circuits. The selection and application of these devices was in accordance with the American Electric Power Nuclear Generation design practices. The use of these design practices assures that, for electric fault and overloads, cables have a level of protection which prevents degradation beyond that which would be experienced by continuous operation of these cables beyond their rated current value. The operation of these protective devices, by limiting cable damage, also prevents the occurrence of cable faults which could cause ignition of these cables.

Reference: FPPM Section 12.5 Electrical Protection Breaker/Fuse Coordination Summary. "Electrical circuit fault protection is designed to provide protection for plant electric circuits via protective relaying, circuit breakers and fuses. This protective equipment is designed and applied to ensure adequate protection of all electrical distribution equipment, including cables, from electric faults and overload conditions in the circuits. The selection and application of these devices is in accordance with American Electric Power Service Corporation design practices. The use of these design practices assures that, for electric fault and overloads, cables have a level of protection which prevents degradation beyond that which would be experienced by continuous operation of these cables at their rated current value. The operation of these protective devices, by limiting cable damage, also prevents the occurrence of cable faults which could cause ignition of these cables." An integral part of the electrical system protection is the proper coordination of these protection devices. Such coordination assures that the protective device nearest (in an electrical sense) to the fault operates prior to the operation of any "upstream" protective devices, and provides interruption of electrical service to a minimum amount of equipment.

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

Coordination studies were performed for the auxiliary system buses of the Cook Nuclear Plant Units 1 and 2. These coordination studies included the 4KV AC, 600V AC, 480V AC, 120V AC and 250V DC auxiliary systems. The original plant design of the electrical auxiliary systems was installed as a coordinated system under the requirements of the specific regulations at that time. After this initial design, continued coordination was maintained via design verification practices whenever modifications to the existing systems warranted recalibration of the existing protective devices.

Analysis of the auxiliary system (4KV AC, 600V AC, 480V AC, 120V AC, and 250V DC) has since been done several times:

1982-1983 - Cook Nuclear Plant coordination study performed on all auxiliary systems to verify coordination. This included fault calculations at the various voltage levels within the auxiliary system.

1984 - Cook Nuclear Plant coordination study performed on all auxiliary systems to verify coordination specifically required for compliance with 10 CFR 50, Appendix R, Associated Circuits. This study also included fault calculations.

1988 - Coordination study performed by a contractor on all auxiliary systems. This study was done using existing fault calculations, existing protective device setpoints and fuse sizes, and contractor program complete with all known required industry coordination curves. This study is a concise and easily reviewable computerized study showing all available parameters and time/current curves.

These CNP electrical design practices provide confidence that no associated circuits of concern by common power supply or by common enclosure Type I exists at CNP. As indicated above, the CNP current licensing basis aligns with the intent of the guidance provided in NEI 00-01, however, as part of the transition to NFPA 805, a review was conducted of the existing electrical protection and coordination documentation at CNP for NSCA, Non-Power and FPRA credited power supplies. As expected, most of the circuit protective devices reviewed had been properly selected and were coordinated. However, lack of documentation was identified for some lower voltage power sources in Technical Evaluation 12.5, Rev 0, Associated Circuits by Common Power Supply and by Common Enclosure. These low voltage power sources are identified and addressed in Report AEP-DCC-11-001.

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

Fire Protection Program Manual (FPPM) Rev 11

CNP Technical Evaluation 12.5, Rev 0, Associated Circuits by Common Power Supply and by Common Enclosure

Enercon Report AEP -DCC-11-001

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.3.2 Associated Circuit Cables	Associated Circuit Cables Appendix R, Section III.G.2, requires that separation features be provided for equipment and cables, including associated nonsafety circuits that could prevent operation or cause maloperation due to hot shorts, open circuits, or shorts to ground, of redundant trains of systems necessary to achieve hot shutdown. The three types of associated circuits were identified in Reference 6.1.5 and further clarified in a NRC memorandum dated March 22, 1982 from R. Mattson to D. Eisenhut, Reference 6.1.6. They are as follows: - Spurious actuations - Common power source - Common enclosure Cables Whose Failure May Cause Spurious Actuations Safe shutdown system spurious actuation concerns can result from fire damage to a cable whose failure could cause the spurious actuation/mal-operation of equipment whose operation could affect safe shutdown. These cables are identified in Section 3.3.3 together with the remaining safe shutdown cables required to support control and operation of the equipment. Common Power Source Cables The concern for the common power source associated circuits is the loss of a safe shutdown power source due to inadequate breaker/fuse coordination. In the case of a fire-induced cable failure on a non-safe shutdown load circuit supplied from the safe shutdown power source, a lack of coordination between the upstream supply breaker/fuse feeding the safe shutdown power source and the load breaker/fuse supplying the non-safe shutdown faulted circuit can result in loss of the safe shutdown bus. This would result in the loss of power to the safe shutdown equipment supplied from that power source preventing the safe shutdown equipment from performing its required safe shutdown function. Identify these cables together with the remaining safe shutdown cables required to support control and operation of the equipment. Refer to Section 3.5.2.4 for an acceptable methodology for analyzing the impact of these cables on post-fire safe shutdown. Common Enclosure Cables The concern with common enclosure associated circuits is fire damage to a cable whose failure could propagate to other safe shutdown cables in the same enclosure either because the circuit is not properly protected by an isolation device (breaker/fuse) such that a fire-induced fault could result in ignition along its length, or by the fire propagating along the cable and into an adjacent fire area. This fire spread to an adjacent fire area could impact safe shutdown equipment in that fire area, thereby resulting in a condition that exceeds the criteria and assumptions of this methodology (i.e., multiple fires). Refer to Section 3.5.2.5 for an acceptable methodology for analyzing the impact of these cables on post-fire safe shutdown.

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NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

Applicability	**Comments**
Applicable	Specific guidance addressed in referenced sections

Alignment Statement

Not Applicable

Alignment Basis

Refer to subsequent sections 3.3.3.3, 3.5.2.4, & 3.5.2.5 for alignment basis

Reference Documents

Not Applicable

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NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.3.3 Methodology for Cable Selection and Location	Refer to Figure 3-4 for a flowchart illustrating the various steps involved in selecting the cables necessary for performing a post-fire safe shutdown analysis. Use the following methodology to define the cables required for safe shutdown including cables that may cause associated circuits concerns for a post-fire safe shutdown analysis: [Refer to hardcopy of NEI 00-01 for Figure]

Applicability	Comments
Applicable	No specific guidance provided

Alignment Statement

Not Applicable

Alignment Basis

Refer to subsequent sections for specific guidance and alignment basis.

Reference Documents

Not Applicable

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.3.3.1 Identify Circuits Required for the Operation of the Safe Shutdown Equipment	For each piece of safe shutdown equipment defined in section 3.2, review the appropriate electrical diagrams including the following documentation to identify the circuits (power, control, instrumentation) required for operation or whose failure may impact the operation of each piece of equipment: - Single-line electrical diagrams - Elementary wiring diagrams - Electrical connection diagrams - Instrument loop diagrams. For electrical power distribution equipment such as power supplies, identify any circuits whose failure may cause a coordination concern for the bus under evaluation. If power is required for the equipment, include the closest upstream power distribution source on the safe shutdown equipment list. Through the iterative process described in Figures 3-2 and 3-3, include the additional upstream power sources up to either the offsite or the emergency power source. [Refer to hardcopy of NEI 00-01 for Figure]

Applicability	Comments
Applicable	

Alignment Statement

Aligns

Alignment Basis

Reference: SSSA, Section 3.0, "The following key documents were used in performing the circuit analysis: 1 . Elementary Diagrams - Electrical drawings, also known as schematic diagrams, showing the sequence of operation and control of electrical equipment. 2. Wiring Diagrams - Electrical drawings used to identify power, control, and instrumentation cables of SSD components. These drawings show the connection points of wires within cabinets, panels, devices, etc."

Reference: SSSA, Section 3.3.1, "All cables associated with each SSD component were originally identified on a safe shutdown component worksheet, along with additional information such as component position requirements, component fire zone location, SSCCD number, and high-low pressure interface information." Elementary diagrams were marked up to identify the control circuit required and associated cables. Each cable was reviewed to determine the effects of a single fire-induced hot short, open circuit, and short to ground on each conductor of the cable in question. If a fault on the cable in question could place the component in an undesired position (for any SSD mode) or prevent the component from operating as needed for any shutdown mode, then the cable was considered a required Appendix R cable for that component. "Codes were documented on the safe shutdown component worksheets to provide specifics on the fault consequences of the cable and the bases for including or excluding the cable from the required Appendix R cable list."

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NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

This was an iterative process to ensure all necessary power supplies were addressed. No cases of inadequate coordination were identified under Appendix R that required the inclusion of a particular circuit to a SSD power source. Therefore, the existing CNP methodology aligns with the NEI 00-01 guidance. However, Associated Circuits by Common Power Supply are being further reviewed as part of the transition (See response to Section 3.3.1.7)

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

Safe Shutdown Capability Assessment (SSCA) Rev 14

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NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.3.3.2 Identify Interlocked Circuits and Cables Whose Spurious Operation or Mal-operation Could Affect Shutdown	In reviewing each control circuit, investigate interlocks that may lead to additional circuit schemes, cables and equipment. Assign to the equipment any cables for interlocked circuits that can affect the equipment. While investigating the interlocked circuits, additional equipment or power sources may be discovered. Include these interlocked equipment or power sources in the safe shutdown equipment list (refer to NEI 00-01 Rev 1 Figure 3-3) if they can impact the operation of the equipment under consideration. [Refer to hardcopy of NEI 00-01 for Figure]

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Procedure 12-EHP-2270-SSA-004, Section 3.4.3a discusses interlocks that may lead to additional circuit schemes, cables and equipment:

"Typically, valve/circuit breaker position interlocks are communicated via the valve limit switch/auxiliary breaker contact. A control circuit cable from the control circuit of the interlocked safe shutdown (SSD) component(s) is connected to the limit switch rotor of the initiating valve or auxiliary breaker contact of the initiating circuit breaker. The initiating component may be considered a required SSD component if the interlock is required for the SSD valve/circuit breaker to perform its safe shutdown function or inadvertent actuation of the interlock places the SSD valve/circuit breaker in a non-desired position, or Inadvertent actuation prematurely places the SSD valve/circuit breaker in its desired position. The circuit analysis for the SSD interlocked valve/circuit breaker shall not include any cable from the initiating valve/circuit breaker. Rather, circuit analysis will be performed for each valve/circuit breaker, and the component relationship depicted on the Logic Diagrams. If the initiating component is not considered a safe shutdown component, then all cables associated with the initiating component that could suffer fire induced damage and adversely affect the interlocked SSD component's ability to perform its safe shutdown function must be included with the SSD component.

In some cases interlocks may be communicated from a relay in the initiating component control circuit or a separate interposing control circuit. Actuation of the relay then communicates the interlock signal to the control circuit of the interlocked safe shutdown component(s). In such cases, fire induced cable damage to the power or control circuit of the initiating component or interposing control circuit may prevent communication of the interlock signal to the interlocked component(s) even if the component is manually repositioned. In such cases, any cables which could be damaged by fire and prevent actuation of the interlock relay shall be listed as required for the interlocked safe shutdown component(s). The initiating component may be conservatively identified as a required safe shutdown component (note: such components may have been previously identified as associated by spurious operation). This applies to only

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NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

those interlocks that are credited for post-fire safe shutdown."

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Cable and Associated Circuit Analysis, Procedure 12-EHP-2270-SSA-004, Rev. 2

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NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.3.3.3 Assign Cables to the Safe Shutdown Equipment	Given the criteria/assumptions defined in Section 3.3.1, identify the cables required to operate or that may result in mal-operation of each piece of safe shutdown equipment. Tabulate the list of cables potentially affecting each piece of equipment in a relational database including the respective drawing numbers, their revision and any interlocks that are investigated to determine their impact on the operation of the equipment. In certain cases, the same cable may support multiple pieces of equipment. Relate the cables to each piece of equipment, but not necessarily to each supporting secondary component. If adequate coordination does not exist for a particular circuit, relate the power cable to the power source. This will ensure that the power source is identified as affected equipment in the fire areas where the cable may be damaged.

Applicability	Comments
Applicable	

Alignment Statement

Aligns with Intent

Alignment Basis

The circuit analysis methodology is described in reference SSSA, Sections 3.0 and 3.3. This methodology includes consideration of hot shorts (external and internal), open circuits, shorts to ground, and spurious signals (including interlock and permissive circuits).

Reference: Procedure 12-EHP-2270-SSA-004, Section 3.4.2, identifies the process to document required cables necessary to support a SSD component. Cables external to the component's control circuit should be included if any of the identified cable faults can adversely affect the SSD component being analyzed. Alternatively, the cables for such external components may be identified with their own component, and that component analyzed as a SSD component. The interrelationship between the two components should be captured for inclusion in the SAFE Database Model.

No cases of inadequate coordination were identified under Appendix R that required the inclusion of a particular circuit to a SSD power source. Therefore, the existing CNP methodology meets the intent of the NEI 00-01 guidance. However, Associated Circuits by Common Power Supply are being further reviewed as part of the transition (See response to Section 3.3.1.7).

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

Safe Shutdown Cable and Associated Circuit Analysis, Procedure 12-EHP-2270-SSA-004, Rev. 2

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NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.5 Circuit Analysis and Evaluation	This section on circuit analysis provides information on the potential impact of fire on circuits used to monitor, control and power safe shutdown equipment. Applying the circuit analysis criteria will lead to an understanding of how fire damage to the cables may affect the ability to achieve and maintain post-fire safe shutdown in a particular fire area. This section should be used in conjunction with Section 3.4, to evaluate the potential fire-induced impacts that require mitigation. Appendix R Section III.G.2 identifies the fire-induced circuit failure types that are to be evaluated for impact from exposure fires on safe shutdown equipment. Section III.G.2 of Appendix R requires consideration of hot shorts, shorts-to-ground and open circuits.

Applicability	Comments
Applicable	No specific guidance provided.

Alignment Statement

Not Applicable

Alignment Basis

Refer to subsequent sections for specific guidance and alignment basis.

Reference Documents

Not Applicable

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NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref
3.5.1 Criteria/Assumptions

NEI 00-01 Section 3 Guidance
Apply the following criteria/assumptions when performing fire-induced circuit failure evaluations.

Applicability
Applicable

Comments
No specific guidance provided.

Alignment Statement
Not Applicable

Alignment Basis
Refer to subsequent sections for specific guidance and alignment basis.

Reference Documents
Not Applicable

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NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref
3.5.1.1 Criteria/Assumptions

NEI 00-01 Section 3 Guidance
Consider the following circuit failure types on each conductor of each unprotected safe shutdown cable to determine the potential impact of a fire on the safe shutdown equipment associated with that conductor.

- A hot short may result from a fire-induced insulation breakdown between conductors of the same cable, a different cable or from some other external source resulting in a compatible but undesired impressed voltage or signal on a specific conductor. A hot short may cause a spurious operation of safe shutdown equipment.

- An open circuit may result from a fire-induced break in a conductor resulting in the loss of circuit continuity. An open circuit may prevent the ability to control or power the affected equipment. An open circuit may also result in a change of state for normally energized equipment. (e.g. [for BWRs] loss of power to the Main Steam Isolation Valve (MSIV) solenoid valves due to an open circuit will result in the closure of the MSIVs). Note that RIS 2004-03 indicates that open circuits, as an initial mode of cable failures, are considered to be of very low likelihood. The risk-informed inspection process will focus on failures with relatively high probabilities.

- A short-to-ground may result from a fire-induced breakdown of a cable insulation system, resulting in the potential on the conductor being applied to ground potential. A short-to-ground may have all of the same effects as an open circuit and, in addition, a short-to-ground may also cause an impact to the control circuit or power train of which it is a part.

Consider the three types of circuit failures identified above to occur individually on each conductor of each safe shutdown cable on the required safe shutdown path in the fire area.

Applicability
Applicable

Comments
Both intra-cable and inter-cable hot shorts are postulated. The "double break" philosophy for passive valves that is currently part of the existing Appendix R Licensing Basis has not been relied upon as part of the transition to NFPA 805.

Alignment Statement
Aligns

Alignment Basis
Reference: SSSA, Section 3.3, Each cable was reviewed to determine the effects of a single fire-induced hot short, open circuit, and short to ground on each conductor of the cable in question. If a fault on the cable in question could place the component in an undesired position (for any SSD mode) or prevent the component from operating as needed for any shutdown mode, then the cable was considered a required Appendix R cable for that component. Codes were documented on the safe shutdown component worksheets to provide specifics on the fault consequences of the cable and the bases for including or excluding the cable from the required Appendix R cable list.

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The CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

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NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref

3.5.1.2 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

Assume that circuit contacts are positioned (i.e., open or closed) consistent with the normal mode/position of the safe shutdown equipment as shown on the schematic drawings. The analyst must consider the position of the safe shutdown equipment for each specific shutdown scenario when determining the impact that fire damage to a particular circuit may have on the operation of the safe shutdown equipment.

Applicability

Applicable

Comments

Alignment Statement

Aligns with Intent

Alignment Basis

Although this assumption regarding circuit contact position is not specifically stated in the SSSA , Section 2.3 does indicate that the normal, failure, and desired positions of SSD components were identified to assist in circuit analysis. Circuit work sheets and the SAFE Database reflect component positions/states used as input to the cable analysis. The component position information was used to determine which cable faults could fail the component or place the component in the undesired position.

The existing CNP methodology meets the intent of NEI 00-01 guidance.

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

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NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref

3.5.1.3 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

Assume that circuit failure types resulting in spurious operations exist until action has been taken to isolate the given circuit from the fire area, or other actions have been taken to negate the effects of circuit failure that is causing the spurious actuation. The fire is not assumed to eventually clear the circuit fault. Note that RIS 2004-03 indicates that fire-induced hot shorts typically self-mitigate after a limited period of time.

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

The circuit analysis did not assume that cable faults eventually cleared or self-mitigated after a certain period of time. Procedure 12-EHP-2270-SSA-001, Section 4.2.1.L assumes a "hot short" condition is postulated to exist until action has been taken to isolate the given circuit or other actions, as appropriate, have been taken to negate the effects of the spurious actuation.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

12-EHP-2270-SSA-001, Rev 0b Safe Shutdown Systems Analysis

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NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref

3.5.1.4 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

When both trains are in the same fire area outside of primary containment, all cables that do not meet the separation requirements of Section III.G.2 are assumed to fail in their worst case configuration.

Applicability

Applicable

Comments

Alignment Statement

Aligns with Intent

Alignment Basis

Reference: SSSA, Sections 3.3 and 4.1.1.5, identifies that if a fault on the cable could place the component in an undesired position (for any SSD mode) or prevent the component from operating as needed for any shutdown mode, then the cable was considered a required cable for that component. Codes were documented on the safe shutdown component worksheets to provide specifics on the fault consequences of the cable and the bases for including or excluding the cable from future consideration. When performing the Separation Analysis the process of evaluating impacts on safe shutdown cables, equipment and systems considered all cable and equipment credited in the safe shutdown analysis model located in each fire area that may be potentially damaged by the fire.

The existing CNP methodology meets the intent of NEI 00-01 guidance.

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

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NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.5.1.5 Criteria/Assumptions	The following guidance provides the NRC inspection focus from Bin 1 of RIS 2004-03 in order to identify any potential combinations of spurious operations with higher risk significance. Bin 1 failures should also be the focus of the analysis; however, NRC has indicated that other types of failures required by the regulations for analysis should not be disregarded even if in Bin 2 or 3. If Bin 1 changes in subsequent revisions of RIS 2004-03, the guidelines in the revised RIS should be followed. Cable Failure Modes. For multiconductor cables testing has demonstrated that conductor-to-conductor shorting within the same cable is the most common mode of failure. This is often referred to as "intra-cable shorting." It is reasonable to assume that given damage, more than one conductor-to-conductor short will occur in a given cable. A second primary mode of cable failure is conductor-to-conductor shorting between separate cables, commonly referred to as "inter-cable shorting." Inter-cable shorting is less likely than intra-cable shorting. Consistent with the current knowledge of fire-induced cable failures, the following configurations should be considered: A. For any individual multiconductor cable (thermoset or thermoplastic), any and all potential spurious actuations that may result from intra-cable shorting, including any possible combination of conductors within the cable, may be postulated to occur concurrently regardless of number. However, as a practical matter, the number of combinations of potential hot shorts increases rapidly with the number of conductors within a given cable. For example, a multiconductor cable with three conductors (3C) has 3 possible combinations of two (including desired combinations), while a five conductor cable (5C) has 10 possible combinations of two (including desired combinations), and a seven conductor cable (7C) has 21 possible combinations of two (including desired combinations). To facilitate an inspection that considers most of the risk presented by postulated hot shorts within a multiconductor cable, inspectors should consider only a few (three or four) of the most critical postulated combinations. B. For any thermoplastic cable, any and all potential spurious actuations that may result from intra-cable and inter-cable shorting with other thermoplastic cables, including any possible combination of conductors within or between the cables, may be postulated to occur concurrently regardless of number. (The consideration of thermoset cable inter-cable shorts is deferred pending additional research.) C. For cases involving the potential damage of more than one multiconductor cable, a maximum of two cables should be assumed to be damaged concurrently. The spurious actuations should be evaluated as previously described. The consideration of more than two cables being damaged (and subsequent spurious actuations) is deferred pending additional research. D. For cases involving direct current (DC) circuits, the potential spurious operation due to failures of the associated control cables (even if the spurious operation requires two concurrent hot shorts of the proper polarity, e.g., plus-to-plus

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NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

and minus-to-minus) should be considered when the required source and target conductors are each located within the same multiconductor cable.

E. Instrumentation Circuits. Required instrumentation circuits are beyond the scope of this associated circuit approach and must meet the same requirements as required power and control circuits. There is one case where an instrument circuit could potentially be considered an associated circuit. If fire-induced damage of an instrument circuit could prevent operation (e.g., lockout permissive signal) or cause maloperation (e.g., unwanted start/stop/reposition signal) of systems necessary to achieve and maintain hot shutdown, then the instrument circuit may be considered an associated circuit and handled accordingly.

Likelihood of Undesired Consequences

Determination of the potential consequence of the damaged associated circuits is based on the examination of specific NPP piping and instrumentation diagrams (P&IDs) and review of components that could prevent operation or cause maloperation such as flow diversions, loss of coolant, or other scenarios that could significantly impair the NPP's ability to achieve and maintain hot shutdown. When considering the potential consequence of such failures, the [analyst] should also consider the time at which the prevented operation or maloperation occurs. Failures that impede hot shutdown within the first hour of the fire tend to be most risk significant in a first-order evaluation. Consideration of cold-shutdown circuits is deferred pending additional research.

Applicability

Applicable

Comments

RIS 2004-03 Bin 1 was reviewed under a separate self assessment performed by AEP in 2005 however the RIS was not considered as part of the licensing basis for component / cable selection process under Appendix R or moving forward as part of NFPA 805 .

Alignment Statement

Aligns with Intent

Alignment Basis

Per SSCA Section 2.7.3, circuits which could cause the undesired spurious actuation of safe shutdown components were identified in the Safe Shutdown System Analysis. In order for spurious actuation to occur, various conditions must exist synergistically at the cable fault location, these conditions took into account jacket material and number of conductors. Credit was taken for AEPNG design standard that requires that the control switch and relay contacts "double break" the positive and negative control leads for components whose spurious operation could affect safe shutdown [e.g., solenoid and motor-operated valves]. The implementation of this design standard for these control circuits (250-Vdc and 220-Vac) at CNP prevents single cable-to-cable faults from initiating spurious operation. For the ungrounded ac control circuits, the identical consideration exists. MCC transformer secondary 220-Vac control circuits are ungrounded. There are no 220-Vac circuits installed at CNP and the 120-Vac system does not contain sufficient energy to cause a 220-Vac coil to "pick up".

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NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

Therefore, at a minimum, two cable-to-cable shorts must occur simultaneously in order for spurious operation to result for circuits supplied from different sources. In addition, for circuits supplied from the same source, the "double break" design standard would require two cable-to-cable independent shorts prior to occurrence of any device's spurious operation.

Although this approach was reviewed and approved by the NRC in the November 22, 1983 Safety Evaluation for Appendix R, the "double break" design credited under Appendix R will not be carried forward in the transition to the new licensing basis. Circuit failures identified as a result of inclusion of new cables added to the NFPA 805 analysis for these double break valves will be captured, analyzed and addressed using risk-informed, performance-based techniques.

The revised circuit analysis process and methods for addressing fire induced cable damage and multiple spurious operations are documented in approved project procedures and being incorporated into the NFPA 805 transition. The process includes considering the effects of fire damage on both thermoplastic and thermoset cable, any possible combination of conductors shorting within intra-cable and does not limit the number of cables when addressing spurious operations due to inter-cable shorting.

The CNP methodology meets the intent of the guidance provided in NEI 00-01

Reference Documents

CNP Fire Protection Self-Assessment, Assessment No. SA2005-DEM-001-P, September 2005 "RIS 2004-03, Circuit Failures"

Safe Shutdown Capability Assessment (SSCA) Rev 14

NRC Alternative Shutdown Capability Safety Evaluation dated November 22, 1983

Safe Shutdown Cable and Associated Circuit Analysis, Procedure 12-EHP-2270-SSA-004, Rev. 2

Procedure EPM-DP-EP-004, Rev 1, Post-Fire Safe Shutdown / Fire PRA Cable Identification

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NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref

3.5.2 Types of Circuit Failures

NEI 00-01 Section 3 Guidance

Appendix R requires that nuclear power plants must be designed to prevent exposure fires from defeating the ability to achieve and maintain post-fire safe shutdown. Fire damage to circuits that provide control and power to equipment on the required safe shutdown path and any other equipment whose spurious operation/mal-operation could affect shutdown in each fire area must be evaluated for the effects of a fire in that fire area. Only one fire at a time is assumed to occur. The extent of fire damage is assumed to be limited by the boundaries of the fire area. Given this set of conditions, it must be assured that one redundant train of equipment capable of achieving hot shutdown is free of fire damage for fires in every plant location. To provide this assurance, Appendix R requires that equipment and circuits required for safe shutdown be free of fire damage and that these circuits be designed for the fire-induced effects of a hot short, short-to-ground, and open circuit. With respect to the electrical distribution system, the issue of breaker coordination must also be addressed.

This section will discuss specific examples of each of the following types of circuit failures:

- Open circuit
- Short-to-ground
- Hot short.

Applicability

Applicable

Comments

No specific guidance provided.

Alignment Statement

Not Applicable

Alignment Basis

Refer to subsequent sections for specific guidance and alignment basis.

Reference Documents

Not Applicable.

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NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref

3.5.2.1 Circuit Failures Due to an Open Circuit

NEI 00-01 Section 3 Guidance

This section provides guidance for addressing the effects of an open circuit for safe shutdown equipment. An open circuit is a fire-induced break in a conductor resulting in the loss of circuit continuity. An open circuit will typically prevent the ability to control or power the affected equipment. An open circuit can also result in a change of state for normally energized equipment. For example, a loss of power to the main steam isolation valve (MSIV) solenoid valves [for BWRs] due to an open circuit will result in the closure of the MSIV.

NOTE: The EPRI circuit failure testing indicated that open circuits are not likely to be the initial fire-induced circuit failure mode. Consideration of this may be helpful within the safe shutdown analysis. Consider the following consequences in the safe shutdown circuit analysis when determining the effects of open circuits:

- Loss of electrical continuity may occur within a conductor resulting in deenergizing the circuit and causing a loss of power to, or control of, the required safe shutdown equipment.

- In selected cases, a loss of electrical continuity may result in loss of power to an interlocked relay or other device. This loss of power may change the state of the equipment. Evaluate this to determine if equipment fails safe.

- Open circuit on a high voltage (e.g., 4.16 kV) ammeter current transformer (CT) circuit may result in secondary damage.

[Refer to hardcopy of NEI 00-01 for Figure 3.5.2-1 that shows example of open circuits]

Applicability

Applicable

Comments

Alignment Statement

Aligns with Intent

Alignment Basis

Reference: SSSA, Section 3.3.2.c. indicates open circuit failure modes were considered due to individual conductor(s) within a cable being capable of losing continuity due to fire damage.

Open circuiting of current transformer (CT) secondaries is addressed in the FPPM, Section 12.6 concluding that based on a review of industry standards and available test data, opening the secondary circuit of a current transformer loop will not cause a transient which would result in the initiation of a fire at the current transformer. Although this analysis found CTs to be acceptable, enhancements to the existing documentation was initiated to further support the NFPA

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

805 Transition. Since there is no specific industry guidelines available and the pilot NFPA 805 plants did not provide any insight to address the issue, a process was developed using a comprehensive screening criteria to eliminate the CT as a potential secondary ignition source. This process was applied and screened a majority of plant CTs, however, manufacturer/model data is unavailable for a number of remaining CTs until such time during a plant outage the CTs are de-energized and access is granted. An AR has been issued to track this item to closure.

The existing CNP methodology meets the intent of the NEI 00-01 guidance.

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

Fire Protection Program Manual (FPPM), Rev 11

CNP Technical Evaluation 12.6, Rev 0, Open Circuiting Concern of Current Transformers

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref

3.5.2.2 Circuit Failures Due to a Short-to-Ground

NEI 00-01 Section 3 Guidance

This section provides guidance for addressing the effects of a short-to-ground on circuits for safe shutdown equipment. A short-to-ground is a fire-induced breakdown of a cable insulation system resulting in the potential on the conductor being applied to ground potential. A short-to-ground can cause a loss of power to or control of required safe shutdown equipment. In addition, a short-to-ground may affect other equipment in the electrical power distribution system in the cases where proper coordination does not exist. Consider the following consequences in the post-fire safe shutdown analysis when determining the effects of circuit failures related to shorts-to-ground:

- A short to ground in a power or a control circuit may result in tripping one or more isolation devices (i.e. breaker/fuse) and causing a loss of power to or control of required safe shutdown equipment.

- In the case of certain energized equipment such as HVAC dampers, a loss of control power may result in loss of power to an interlocked relay or other device that may cause one or more spurious operations.

[Refer to hardcopy of NEI 00-01 for Figures 3.5.2-2 and 3.5.2-3 that shows example of short to ground on ungrounded and grounded circuits]

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Reference: SSSA, Section 3.3.2, The following is a description of the types of fire-induced cable faults that were considered:

A. Short - Individual conductors within a cable short to each other.
B. Ground - Individual conductors within a cable are grounded to the supporting raceway or other grounded structure.

Per Procedure 12-EHP-2270-SSA-004, Section 3.4.3, The process requires that each cable on the worksheet be reviewed to determine the effects of a fire induced hot short, open circuit, and short to ground on each conductor of the cable in question, based on the circuit analysis guidance provided in NEI-00-01, Chapter 3 and NFPA 805, Appendix B

The existing CNP methodology is consistent with NEI 00-01 guidance.

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

Safe Shutdown Cable and Associated Circuit Analysis, Procedure 12-EHP-2270-SSA-004, Rev 2

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref

3.5.2.3 Circuit Failures Due to a Hot Short

NEI 00-01 Section 3 Guidance

This section provides guidance for analyzing the effects of a hot short on circuits for required safe shutdown equipment. A hot short is defined as a fire induced insulation breakdown between conductors of the same cable, a different cable or some other external source resulting in an undesired impressed voltage on a specific conductor. The potential effect of the undesired impressed voltage would be to cause equipment to operate or fail to operate in an undesired manner. Consider the following specific circuit failures related to hot shorts as part of the post-fire safe shutdown analysis:

- A hot short between an energized conductor and a de-energized conductor within the same cable may cause a spurious actuation of equipment. The spuriously actuated device (e.g., relay) may be interlocked with another circuit that causes the spurious actuation of other equipment. This type of hot short is called a conductor-to-conductor hot short or an internal hot short.
- A hot short between any external energized source such as an energized conductor from another cable (thermoplastic cables only) and a de-energized conductor may also cause a spurious actuation of equipment. This is called a cable-to-cable hot short or an external hot short. Cable-to-cable hot shorts between thermoset cables are not postulated to occur pending additional research.

[Refer to hardcopy of NEI 00-01 for Figures 3.5.2-4 and 3.5.2-5 that shows example of hot shorts on ungrounded and grounded circuits]

Applicability

Applicable

Comments

Under Appendix R, CNP credited a "double break" design philosophy that although approved by NRC [in the Alternative Shutdown Capability Safety Evaluation dated November 22, 1983] will not be carried forward as part of the transition to the new licensing basis. Cable selection has been completed for all passive "double break" valves to support circuit analysis consistent with industry testing and NFPA 805 expectations. Circuit failures identified as a result of inclusion of new cables added to the NFPA 805 analysis have been capture and addressed using risk-informed, performance-based techniques.

Alignment Statement

Not in Alignment, but Prior NRC Approval

Alignment Basis

Reference: SSSA, Section 3.3, Each cable was reviewed to determine the effects of a single fire-induced hot short, open circuit, and short to ground on each conductor of the cable in question. If a fault on the cable in question could place the component in an undesired position (for any SSD mode) or prevent the component from operating as needed for any shutdown mode, then the cable was considered a required Appendix R cable for that component. Codes were documented on the safe shutdown component worksheets to provide specifics on the fault consequences of the cable and the bases for including or excluding the cable from the required Appendix R cable list.

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NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

Per SSCA Section 2.7.3, circuits which could cause the undesired spurious actuation of safe shutdown components were identified in the Safe Shutdown System Analysis. In order for spurious actuation to occur, various conditions must exist synergistically at the cable fault location, these conditions took into account jacket material and number of conductors. Credit was taken for AEPNG design standard that requires that the control switch and relay contacts "double break" the positive and negative control leads for components whose spurious operation could affect safe shutdown [e.g., solenoid and motor-operated valves]. The implementation of this design standard for these control circuits (250-Vdc and 220-Vac) at CNP prevents single cable-to-cable faults from initiating spurious operation. For the ungrounded ac control circuits, the identical consideration exists. MCC transformer secondary 220-Vac control circuits are ungrounded. There are no 220-Vac circuits installed at CNP and the 120-Vac system does not contain sufficient energy to cause a 220-Vac coil to "pick up". Therefore, at a minimum, two cable-to-cable shorts must occur simultaneously in order for spurious operation to result for circuits supplied from different sources. In addition, for circuits supplied from the same source, the "double break" design standard would require two cable-to-cable independent shorts prior to occurrence of any device's spurious operation.

Although this approach was reviewed and approved by the NRC in the November 22, 1983 Safety Evaluation for Appendix R, the "double break" design credited under Appendix R will not be carried forward in the transition to the new licensing basis. Circuit failures identified as a result of inclusion of new cables added to the NFPA 805 analysis for these double break valves will be capture, analyzed and addressed using risk-informed, performance-based techniques. Therefore, the CNP methodology will meet the intent of the guidance provided in NEI 00-01 under the new licensing basis.

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

Safe Shutdown Capability Assessment (SSCA) Rev 14

Procedure EPM-DP-EP-004, Rev 1, Post-Fire Safe Shutdown / Fire PRA Cable Identification

NRC Alternative Shutdown Capability Safety Evaluation dated November 22, 1983

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.5.2.4 Circuit Failures Due to Inadequate Circuit Coordination	The evaluation of associated circuits of a common power source consists of verifying proper coordination between the supply breaker/fuse and the load breakers/fuses for power sources that are required for safe shutdown. The concern is that, for fire damage to a single power cable, lack of coordination between the supply breaker/fuse and the load breakers/fuses can result in the loss of power to a safe shutdown power source that is required to provide power to safe shutdown equipment. A coordination study should demonstrate the coordination status for each required common power source. For coordination to exist, the time-current curves for the breakers, fuses and/or protective relaying must demonstrate that a fault on the load circuits is isolated before tripping the upstream breaker that supplies the bus. Furthermore, the available short circuit current on the load circuit must be considered to ensure that coordination is demonstrated at the maximum fault level. The methodology for identifying potential associated circuits of a common power source and evaluating circuit coordination cases of associated circuits on a single circuit fault basis is as follows: - Identify the power sources required to supply power to safe shutdown equipment. - For each power source, identify the breaker/fuse ratings, types, trip settings and coordination characteristics for the incoming source breaker supplying the bus and the breakers/fuses feeding the loads supplied by the bus. - For each power source, demonstrate proper circuit coordination using acceptable industry methods. - For power sources not properly coordinated, tabulate by fire area the routing of cables whose breaker/fuse is not properly coordinated with the supply breaker/fuse. Evaluate the potential for disabling power to the bus in each of the fire areas in which the associated circuit cables of concern are routed and the power source is required for safe shutdown. Prepare a list of the following information for each fire area: - Cables of concern. - Affected common power source and its path. - Raceway in which the cable is enclosed. - Sequence of the raceway in the cable route. - Fire zone/area in which the raceway is located. For fire zones/areas in which the power source is disabled, the effects are mitigated by appropriate methods.

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

- Develop analyzed safe shutdown circuit dispositions for the associated circuit of concern cables routed in an area of the same path as required by the power source. Evaluate adequate separation based upon the criteria in Appendix R, NRC staff guidance, and plant licensing bases.

Applicability
Applicable

Comments

Alignment Statement
Aligns with Intent

Alignment Basis
Reference: SSCA, Section 2.7.2, "Electrical circuit fault protection was originally designed to provide protection for plant electric circuits via protective relaying, circuit breakers, and fuses. This protective equipment was designed and applied to ensure adequate protection of all electrical distribution equipment, including cables, from electric faults and overload conditions in the circuits. The selection and application of these devices was in accordance with the American Electric Power Nuclear Generation design practices. The use of these design practices assures that, for electric fault and overloads, cables have a level of protection which prevents degradation beyond that which would be experienced by continuous operation of these cables beyond their rated current value. The operation of these protective devices, by limiting cable damage, also prevents the occurrence of cable faults which could cause ignition of these cables.

An integral part of the original electrical system protection was the proper coordination of all these devices. Such coordination assures that the protective device nearest (in an electrical sense) to the fault operates prior to the operation of any "upstream" protective devices, and provides interruption of electrical service to a minimum amount of equipment. The original and current electrical protection design at CNP requires coordination of such electrical protective devices. These CNP electrical design practices provide confidence that no associated circuits of concern by common power supply or by common enclosure Type I exists at CNP.

The existing plant procedure for safe shutdown circuit selection 12-EHP-2270-SSA-004 (Rev. 2) emphasizes that proper coordination must exist between circuits prior to determining which cables are required for Appendix R.

As indicated above, CNP aligned with the intent of the guidance provided in NEI 00-01, however, as part of the review to transition to NFPA 805, a review was conducted of the existing electrical protection and coordination documentation at CNP for the power supplies credited for the NSCA, Non-Power Modes Review and Fire PRA. As expected, calculation were available for the majority of power supplies showing that circuit protective devices are properly selected and coordinated. However, lack of documentation was identified for some lower voltage power sources and is addressed in Report AEP-DCC-11-001 (See response to Section 3.3.1.7)

Reference Documents
Safe Shutdown Capability Assessment (SSCA) Rev 14

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NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

CNP Technical Evaluation 12.5, Rev 0, Associated Circuits by Common Power Supply and by Common Enclosure

Enercon Report AEP-DCC-11-001

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NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

NEI 00-01 Ref

3.5.2.5 Circuit Failures Due to Common Enclosure Concerns

NEI 00-01 Section 3 Guidance

The common enclosure associated circuit concern deals with the possibility of causing secondary failures due to fire damage to a circuit either whose isolation device fails to isolate the cable fault or protect the faulted cable from reaching its ignition temperature, or the fire somehow propagates along the cable into adjoining fire areas.

The electrical circuit design for most plants provides proper circuit protection in the form of circuit breakers, fuses and other devices that are designed to isolate cable faults before ignition temperature is reached. Adequate electrical circuit protection and cable sizing are included as part of the original plant electrical design maintained as part of the design change process. Proper protection can be verified by review of as-built drawings and change documentation. Review the fire rated barrier and penetration designs that preclude the propagation of fire from one fire area to the next to demonstrate that adequate measures are in place to alleviate fire propagation concerns.

Applicability

Applicable

Comments

Alignment Statement

Aligns with Intent

Alignment Basis

Reference SSCA, Section 2.7.2, The original and current electrical protection design at CNP requires coordination of such electrical protective devices. These CNP electrical design practices provide confidence that no associated circuits of concern by common power supply or by common enclosure Type I exists at CNP. For associated circuits of concern by common enclosure Type 2, the design of the fire protection features at CNP ensures that no such circuits exist. Associated circuits of concern that occur as intervening combustibles are resolved by one or both of the following methods: a) Use of non-propagating cable jacket materials and b) Use of fire stops at appropriate cable tray sections to prevent damage to hot shutdown system cables.

CNP aligned with the intent of the guidance provided in NEI 00-01, however, as part of the transition to NFPA 805, a review was conducted of the existing electrical protection and coordination documentation at CNP for power supplies credited for the NSCA, Non-Power Mode Review and Fire PRA. As expected, calculations were available for the majority of power supplies. However, the inability of certain power sources to demonstrate adequate thermal withstand capabilities was noted during the review and is addressed in Technical Evaluation 12.5.1. (See response to Section 3.3.1.7)

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

CNP Technical Evaluation 12.5, Rev 0, Associated Circuits by Common Power Supply and by Common Enclosure

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.2 Nuclear Safety Capability Circuit Analysis

CNP Technical Evaluation 12.5.1, Rev 0, Secondary Fire Evaluation

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.3 Nuclear Safety Equipment and Cable Location

Physical location of equipment and cables shall be identified.

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.3.3.4 Identify Routing of Cables	Identify the routing for each cable including all raceway and cable endpoints. Typically, this information is obtained from joining the list of safe shutdown cables with an existing cable and raceway database.

Applicability	Comments
Applicable	

Alignment Statement

Aligns

Alignment Basis

Reference: SSSA, Section 3.3.4, cables to raceway correlations for all required Appendix R cables are maintained in the EDISON/SAFE Database. Data includes the to / from equipment for each cable endpoint

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.3 Nuclear Safety Equipment and Cable Location

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.3.3.5 Identify Location of Raceway and Cables by Fire Area	Identify the fire area location of each raceway and cable endpoint identified in the previous step and join this information with the cable routing data. In addition, identify the location of field-routed cable by fire area. This produces a database containing all of the cables requiring fire area analysis, their locations by fire area, and their raceway.

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Reference: SSCA, Section 2.8, "The routing of each SSS cable was obtained from the cable and conduit schedules. This information was entered into a database concurrently with the fire zone location of every safe shutdown cable trough in the plant. This database is maintained as a part of the Safe Shutdown System Analysis. Database sorts were made which list the complete route of each SSS cable and all associated fire zones for each cable. This database information was also sorted and printed out by system and by fire zone to give a complete listing of SSS cables and equipment within all plant fire zones."

Reference: SSSA, Section 3.3.3, "Cable Fire Zone Routing: The routing of cables by fire zone was performed for all required Appendix R cables. The first step in this process is the cable-to-raceway (conduit or cable tray) correlation. This is necessary, since fire zone routing is performed by raceway, as opposed to by cable. The cable-to-raceway correlation was determined by review of the conduit and cable schedule. After the cable-to-raceway correlation is made, fire zone routing of the Appendix R raceways was performed by a manual review of the physical layout drawings and fire zone boundary drawings. The fire zone routing was documented by cable on worksheets included in the Circuit Analysis Package maintained for each Appendix R electrically supervised component.

Reference: SSSA, Section 4.1.1.6, "The documentation of compliance for each analysis area is contained in the SAFE software module. The cable, system and/or equipment resolutions can be viewed for a particular analysis area following a software analysis of that area. Additionally, routing, fire zone, cable and equipment information as well as referenced documentation can be accessed and viewed via SAFE."

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

Safe Shutdown Capability Assessment (SSCA) Rev 14

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.4 Fire Area Assessment

An engineering analysis shall be performed in accordance with the requirements of Section 2.3 for each fire area to determine the effects of fire or fire suppression activities on the ability to achieve the nuclear safety performance criteria of Section 1.5. See Chapter 4 for methods of achieving these performance criteria (performance-based or deterministic).

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.4 Fire Area Assessment and Compliance Strategies	By determining the location of each component and cable by fire area and using the cable to equipment relationships described above, the affected safe shutdown equipment in each fire area can be determined. Using the list of affected equipment in each fire area, the impacts to safe shutdown systems, paths and functions can be determined. Based on an assessment of the number and types of these impacts, the required safe shutdown path for each fire area can be determined. The specific impacts to the selected safe shutdown path can be evaluated using the circuit analysis and evaluation criteria contained in Section 3.5 of this document. Having identified all impacts to the required safe shutdown path in a particular fire area, this section provides guidance on the techniques available for individually mitigating the effects of each of the potential impacts.

Applicability	Comments
Applicable	No specific guidance provided

Alignment Statement
Not Applicable

Alignment Basis
Refer to subsequent sections for specific guidance and alignment basis.

Reference Documents
Not Applicable

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.4 Fire Area Assessment

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.4.1 Criteria/Assumptions	The following criteria and assumptions apply when performing fire area compliance assessment to mitigate the consequences of the circuit failures identified in the previous sections for the required safe shutdown path in each fire area.

Applicability	Comments
Not Applicable	No specific guidance provided.

Alignment Statement
Not Applicable

Alignment Basis
Refer to subsequent sections for specific guidance and alignment basis.

Reference Documents
Not Applicable

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.4 Fire Area Assessment

NEI 00-01 Ref
3.4.1.1 Criteria/Assumptions

NEI 00-01 Section 3 Guidance
Assume only one fire in any single fire area at a time.

Applicability
Applicable

Comments

Alignment Statement
Aligns

Alignment Basis
Reference Procedure 12-EHP-2270-SSA-001, Section 3.5.1.a, "An exposure fire involving either transient or in-situ combustibles is assumed to occur in only one plant fire area or fire zone(s) (enclosed in barriers with construction commensurate with the hazard) at a time."

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents
Safe Shutdown Analysis Update, 12-EHP-2270-SSA-001, Rev 1

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.4 Fire Area Assessment

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.4.1.2 Criteria/Assumptions	Assume that the fire may affect all unprotected cables and equipment within the fire area. This assumes that neither the fire size nor the fire intensity is known. This is conservative and bounds the exposure fire that is required by the regulation.

Applicability	Comments
Applicable	

Alignment Statement

Aligns

Alignment Basis

Reference: SSSA, Section 4.1.1.5, "Using the automated analysis program SAFE, each area was initially analyzed unprotected/unresolved."

The analysis program SAFE fails all cables and components that are credited in the analysis model within the fire area under review. If a cable/equipment is not protected for all zones in an area then it is not credited for success in that area. In order to credit an affected component, resolutions must be applied to adequately address the fire-induced failure mode.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.4 Fire Area Assessment

NEI 00-01 Ref

3.4.1.3 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

Address all cable and equipment impacts affecting the required safe shutdown path in the fire area. All potential impacts within the fire area must be addressed. The focus of this section is to determine and assess the potential impacts to the required safe shutdown path selected for achieving post-fire safe shutdown and to assure that the required safe shutdown path for a given fire area is properly protected.

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Reference: SSSA, Section 1.3, The SAFE database identifies cables and components that could be affected by a fire in each fire area within the plant. Each plant fire area was reviewed and analyzed to determine the effect of a postulated fire on SSD capability. Compliance strategies were documented for each component affected by a postulated fire in the area under review.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.4 Fire Area Assessment

NEI 00-01 Ref

3.4.1.4 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

Use manual actions where appropriate to achieve and maintain postfire safe shutdown conditions in accordance with NRC requirements.

Applicability

Applicable

Comments

Pre-transition OMAs will be addressed in accordance Fire Risk Evaluation process and FAQ 07-030 to ensure appropriately transitioned as recovery actions to the NFPA 805 Licensing Basis.

Alignment Statement

Aligns

Alignment Basis

Manual Actions are credited under Appendix R in accordance with NRC Requirements. Manual Action Feasibility has been evaluated for applicable actions documented in fire response procedures.

The existing CNP methodology is consistent with NEI 00-01 guidance for performing manual actions.

Reference Documents

CNP Technical Evaluation 12.7 Rev 5, "Safe Shutdown Manual Action Feasibility Study"

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.4 Fire Area Assessment

NEI 00-01 Ref

3.4.1.5 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

Where appropriate to achieve and maintain cold shutdown within 72 hours, use repairs to equipment required in support of post-fire shutdown.

Applicability

Applicable

Comments

NFPA 805 requirement is to achieve "safe and stable state" versus the ability "to achieve and maintain cold shutdown within 72 hours" in Appendix R.

Alignment Statement

Aligns

Alignment Basis

Reference: SSCA, Section 4.0, "Repairs and Cold Shutdown Operability: In accordance with the provisions of Appendix R, CNP has demonstrated the ability of achieving cold shutdown for all fires assumed within the 72-hour time frame permitted by the rule for full alternate shutdown areas. CNP recognizes that provisions of Appendix R do not require plant operating personnel to attain cold shutdown conditions of the fire-affected unit within 72 hours should a fire occur for areas that do not require full alternate shutdown. However, operating procedures, repair procedures, and modifications have been provided that permit the capability of achieving cold shutdown within the stated time period."

The existing CNP methodology is consistent with NEI 00-01 guidance. However, as pointed out in Section 4.2.1.2 of NFPA 805, given a fire, a plant is not required to transition to cold shutdown. During transition, the CNP fire area assessments documented the method of accomplishment of the NFPA 805 performance goals required to achieve and maintain safe and stable conditions (i.e., Hot Standby) versus the ability to achieve cold shutdown within 72 hours.

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

CSA Calculation AEP-CP-001, Rev 0

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.4 Fire Area Assessment

NEI 00-01 Ref

3.4.1.6 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

Appendix R compliance requires that one train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control station(s) is free of fire damage (III.G.1.a). When cables or equipment, including associated circuits, are within the same fire area outside primary containment and separation does not already exist, provide one of the following means of separation for the required safe shutdown path(s):

- Separation of cables and equipment and associated nonsafety circuits of redundant trains within the same fire area by a fire barrier having a 3-hour rating (III.G.2.a)

- Separation of cables and equipment and associated nonsafety circuits of redundant trains within the same fire area by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area (III.G.2.b).

- Enclosure of cable and equipment and associated non-safety circuits of one redundant train within a fire area in a fire barrier having a one-hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area (III.G.2.c).

For fire areas inside noninerted containments, the following additional options are also available:

- Separation of cables and equipment and associated nonsafety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards (III.G.2.d);

- Installation of fire detectors and an automatic fire suppression system in the fire area (III.G.2.e); or

- Separation of cables and equipment and associated non-safety circuits of redundant trains by a noncombustible radiant energy shield (III.G.2.f).

Use exemptions, deviations and licensing change processes to satisfy the requirements mentioned above and to demonstrate equivalency depending upon the plant's license requirements.

Applicability

Applicable

Comments

Alignment Statement

Aligns

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.4 Fire Area Assessment

Alignment Basis

Reference: SSCA, Section 1.2, Using the System Assurance & Fire protection Engineering (SAFE) module of the fully automated electrical cable and raceway system EDISON of the Genesis Solution Suite® software package, a summary of Appendix R compliance by analysis area was developed and is contained in Summary Table 1- 1. The table contains summary level and reference information regarding Appendix R compliance. Refer to the SSSA for detailed information regarding the methodology for determining Appendix R compliance for each Fire Area. Appendix R compliance is demonstrated by the table in one of three ways:

III.G. 1 - Normal shutdown directed from the fire-affected unit's Control Room, with systems necessary to achieve and maintain cold shutdown from either the control room or emergency control station(s) can be repaired within 72 hours.
III.G.2 - Normal shutdown directed from the fire-affected unit's Control Room, with additional credit taken for barriers and separation, as required, with systems necessary to achieve and maintain cold shutdown from either the control room or emergency control station(s) can be repaired within 72 hours....

Reference: SSSA, Section 4.1.1.5, discussion on the evolution of compliance strategies to meet the deterministic requirements of Appendix R identified above, including the use exemptions and the licensing change process.

The existing CNP methodology is consistent with NEI 00-01 guidance

Reference Documents

Safe Shutdown Capability Assessment (SSCA) Rev 14

Safe Shutdown Systems Analysis (SSSA) Rev 9

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.4 Fire Area Assessment

NEI 00-01 Ref

3.4.1.7 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

Consider selecting other equipment that can perform the same safe shutdown function as the impacted equipment. In addressing this situation, each equipment impact, including spurious operations, is to be addressed in accordance with regulatory requirements and the NPP's current licensing basis.

Applicability

Applicable

Comments

Additional systems, equipment and cables have been added to the SAFE database and model for NFPA 805 Transition & Fire PRA as appropriate

Alignment Statement

Aligns

Alignment Basis

Reference: SSSA, Section 4.1.1.5, "Application of Resolutions: Resolutions were applied in SAFE based on a review of the Compliance Strategies. Application of a resolution to an item (cable, system, or component) is only required if that item's resolution is absolutely necessary for a success path since the logic was constructed to take into account redundant equipment."

In general, redundant trains and equipment are considered to be "other equipment that can perform the same safe shutdown functions as the impacted equipment."

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.4 Fire Area Assessment

NEI 00-01 Ref

3.4.1.8 Criteria/Assumptions

NEI 00-01 Section 3 Guidance

Consider the effects of the fire on the density of the fluid in instrument tubing and any subsequent effects on instrument readings or signals associated with the protected safe shutdown path in evaluating postfire safe shutdown capability. This can be done systematically or via procedures such as Emergency Operating Procedures.

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Per Procedure 12-EHP-2270-SSA-001, Section 3.5.1.h.3 "Instrumentation located in the area of concern is not credited in the event of a fire (without additional review or analysis)."

As part of the NFPA 805 Transition, the impact of fire on instrument tubing sense lines was evaluated considering the fire area location of the instrument sense lines. The sense lines for the applicable process monitoring instruments are included in the NSCA model, and evaluated similar to a cable, such that the instrument is assumed to fail in areas containing its associated tubing unless an evaluation notes otherwise. The sense lines for applicable process monitoring instruments are welded steel therefore, the pressure boundary will not be breached as a result of fire damage.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Analysis Update, 12-EHP-2270-SSA-001, Rev 1

CNP Engineering Specification ES-PIPE-1013-QCN, Rev 3

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.4 Fire Area Assessment

NEI 00-01 Ref

3.4.2 Methodology for Fire Area Assessment

NEI 00-01 Section 3 Guidance

Refer to Figure 3-5 for a flowchart illustrating the various steps involved in performing a fire area assessment.

Use the following methodology to assess the impact to safe shutdown and demonstrate Appendix R compliance:

[Refer to hardcopy of NEI 00-01 for Figure]

Applicability

Applicable

Comments

No Specific guidance provided.

Alignment Statement

Not Applicable

Alignment Basis

Refer to subsequent sections for specific guidance and alignment basis.

Reference Documents

Not Applicable

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.4 Fire Area Assessment

NEI 00-01 Ref

3.4.2.1 Identify the Affected Equipment by Fire Area

NEI 00-01 Section 3 Guidance

Identify the safe shutdown cables, equipment and systems located in each fire area that may be potentially damaged by the fire. Provide this information in a report format. The report may be sorted by fire area and by system in order to understand the impact to each safe shutdown path within each fire area (see Attachment 5 for an example of an Affected Equipment Report).

[Refer to hardcopy of NEI 00-01 for Attachment]

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Reference: SSCA, Section 2.8 Database sorts were made which list the complete route of each SSS cable and all associated fire zones for each cable. This database information was also sorted and printed out by system and by fire zone to give a complete listing of SSS cables and equipment within all plant fire zones.

Reference: SSSA, Section 4.1.1.5, Performing the Separation Analysis provides details related to the process of evaluating impacts on safe shutdown cables, equipment and systems located in each fire area that may be potentially damaged by the fire. The impact reports are generated from the SAFE database on demand.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

Safe Shutdown Capability Assessment (SSCA) Rev 14

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.4 Fire Area Assessment

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.4.2.2 Determine the Shutdown Paths Least Impacted By a Fire in Each Fire Area	Based on a review of the systems, equipment and cables within each fire area, determine which shutdown paths are either unaffected or least impacted by a postulated fire within the fire area. Typically, the safe shutdown path with the least number of cables and equipment in the fire area would be selected as the required safe shutdown path. Consider the circuit failure criteria and the possible mitigating strategies, however, in selecting the required safe shutdown path in a particular fire area. Review support systems as a part of this assessment since their availability will be important to the ability to achieve and maintain safe shutdown. For example, impacts to the electric power distribution system for a particular safe shutdown path could present a major impediment to using a particular path for safe shutdown. By identifying this early in the assessment process, an unnecessary amount of time is not spent assessing impacts to the frontline systems that will require this power to support their operation. Based on an assessment as described above, designate the required safe shutdown path(s) for the fire area. Identify all equipment not in the safe shutdown path whose spurious operation or mal-operation could affect the shutdown function. Include these cables in the shutdown function list. For each of the safe shutdown cables (located in the fire area) that are part of the required safe shutdown path in the fire area, perform an evaluation to determine the impact of a fire-induced cable failure on the corresponding safe shutdown equipment and, ultimately, on the required safe shutdown path. When evaluating the safe shutdown mode for a particular piece of equipment, it is important to consider the equipment's position for the specific safe shutdown scenario for the full duration of the shutdown scenario. It is possible for a piece of equipment to be in two different states depending on the shutdown scenario or the stage of shutdown within a particular shutdown scenario. Document information related to the normal and shutdown positions of equipment on the safe shutdown equipment list.

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Reference: SSSA, Section 1.1, Identifies Genesis Solution Suite® software package, which includes a fully automated electrical cable and raceway system known as EDISON, as well the System Assurance & Fire Protection Engineering (SAFE) component, which provides the capability to perform an Appendix R safe shutdown analysis. SAFE is a safety-related software that automates the Appendix R safe shutdown analysis by utilizing an analysis model composed of plant systems, equipment and cables, and their physical locations. The analysis model uses a Boolean logic evaluation method that supports success path

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.4 Fire Area Assessment

relationships enabling analysis and graphic display capability of each Fire Zone and Appendix R Fire Area to allow the analyst to recognize which shutdown paths are either unaffected or least impacted by a postulated fire within the fire area.

Reference: Procedure 12-EHP-2270-SSA-004, Section 1.5, "The cable fault analysis information determined via this procedure shall be utilized, as applicable, as input to the computer aided safe shutdown analysis program (SAFE)." Section 3.3 further notes "Position information is required for all components... This information will establish the operational requirements that will be used in the fault analysis of each cable/associated circuit. The safe shutdown component operation positions are normal (NP), failure (FP), hot standby (HSBP), hot shutdown (HSDP), cold shutdown (CSDP), alternate A (AAP) and alternate B (ABP)."

Reference: SSSA, Section 4.1.1.5, Resolving system and equipment failures involves applying the compliance strategies and equipment resolutions developed during the evolution of the Appendix R analysis (e.g., Assumptions, Exemptions, Equipment and Circuit Analysis, Required Manual Actions, etc.). These resolutions were identified and applied to the failed component, cable and/or system to capture the basis for equipment or system availability and/or survivability.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

Safe Shutdown Cable and Associated Circuit Analysis, Procedure 12-EHP-2270-SSA-004, Rev. 2

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.4 Fire Area Assessment

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.4.2.3 Determine Safe Shutdown Equipment Impacts	Using the circuit analysis and evaluation criteria contained in Section 3.5 of this document, determine the equipment that can impact safe shutdown and that can potentially be impacted by a fire in the fire area, and what those possible impacts are.

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Reference: Procedure 12-EHP-2270-SSA-004, Section 1.5, "The cable fault analysis information determined via this procedure shall be utilized, as applicable, as input to the computer aided safe shutdown analysis program (SAFE)."

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Cable and Associated Circuit Analysis, Procedure 12-EHP-2270-SSA-004, Rev. 2

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.4 Fire Area Assessment

NEI 00-01 Ref	NEI 00-01 Section 3 Guidance
3.4.2.4 Develop a Compliance Strategy or Disposition to Mitigate the Effects Due to Fire Damage to Each Required Component or Cable	The available deterministic methods for mitigating the effects of circuit failures are summarized as follows (see Figure 1-2): - Provide a qualified 3-fire rated barrier. - Provide a 1-hour fire rated barrier with automatic suppression and detection. - Provide separation of 20 feet or greater with automatic suppression and detection and demonstrate that there are no intervening combustibles within the 20 foot separation distance. - Reroute or relocate the circuit/equipment, or perform other modifications to resolve vulnerability. - Provide a procedural action in accordance with regulatory requirements. - Perform a cold shutdown repair in accordance with regulatory requirements. - Identify other equipment not affected by the fire capable of performing the same safe shutdown function. - Develop exemptions, deviations, Generic Letter 86-10 evaluation or fire protection design change evaluations with a licensing change process. Additional options are available for non-inerted containments as described in 10 CFR 50 Appendix R section III.G.2.d, e and f. [Refer to hardcopy of NEI 00-01 for Figure]

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Reference: SSSA, Section 4.1.1.5, discussion on the evolution of compliance strategies consistent with the deterministic methods identified above. An area by area compliance strategy is demonstrated and document using SAFE model. A summary is provided in Attachment 1 to the SSSA.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

Attachment B - NEI 04-02 TABLE B-2 - Nuclear Safety Capability Assessment Methodology Review

NFPA 805 Section: 2.4.2.4 Fire Area Assessment

NEI 00-01 Ref

3.4.2.5 Document the Compliance Strategy or Disposition Determined to Mitigate the Effects Due to Fire Damage to Each Required Component or Cable

NEI 00-01 Section 3 Guidance

Assign compliance strategy statements or codes to components or cables to identify the justification or mitigating actions proposed for achieving safe shutdown. The justification should address the cumulative effect of the actions relied upon by the licensee to mitigate a fire in the area. Provide each piece of safe shutdown equipment, equipment not in the path whose spurious operation or mal-operation could affect safe shutdown, and/or cable for the required safe shutdown path with a specific compliance strategy or disposition. Refer to Attachment 6 for an example of a Fire Area Assessment Report documenting each cable disposition.

[Refer to hardcopy of NEI 00-01 for Attachment]

Applicability

Applicable

Comments

Alignment Statement

Aligns

Alignment Basis

Reference: SSSA, Section 4.1.1.5, Failed analysis areas were resolved utilizing the compliance strategies and equipment resolutions developed during the evolution of the Appendix R analysis and contained in CNP Safe Shutdown Analysis documentation (e.g., Assumptions, Exemptions, Equipment and Circuit Analysis, Required Manual Actions, etc.). These resolutions were identified and applied to the failed component, cable and/or system to capture the basis for equipment or system availability and/or survivability. Results and reports are generated from SAFE to document SSD analysis.

The existing CNP methodology is consistent with NEI 00-01 guidance.

Reference Documents

Safe Shutdown Systems Analysis (SSSA) Rev 9

D. NEI 04-02 – Non- Power Operational Modes Transition

8 Pages

Attachment D - NEI 04-02 Non-Power Operational Modes Transition

NFPA 805 Section 1.3.1 Nuclear Safety Goal

The nuclear safety goal is to provide reasonable assurance that a fire during any operational mode and plant configuration will not prevent the plant from achieving and maintaining the fuel in a safe and stable condition.

FAQ 07-0040 Implementing Guidance F.1

Review exisiting Outage Management Processes

Define Higher Risk Evolutions (HREs), if not already defined in plant outage management procedures. The HRE definition should consider the following:

- Time to boil
- Reactor coolant system and fuel pool inventory
- Decay heat removal capability

Review

PMP-4100-SDR-001 defines High Risk Evolution (HRE) as "Outage activities, plant configurations, or conditions during shutdown where the plant is more susceptible to an event causing the loss of a key safety function." The procedure does not specifically identify which conditions are HREs, however it identifies special requirements for reduced inventory (or mid-loop) conditions (i.e., Conditions 5C and 6C). These conditions are based on very short times to boil, limited methods available for decay heat removal (e.g. only RHR available), and low RCS inventory. These condition are also consistent with the period of highest risk as described in FAQ 07-0040 Revision 4 guidance.

Reduced Inventory at CNP is defined as when the Reactor Vessel water level is 3 feet (or more) below the Reactor Vessel flange. While a specific time to boil is not identified in PMP-4100-SDR-001, an estimated time to boiling upon total loss of core cooling is documented as part of the daily shutdown safety assessment on the Shutdown Risk Status Report Form.

Unit Applicability 1, 2

Reference Document

PMP-4100-SDR-001,Plant Shutdown Safety and Risk Management, Rev 22

Attachment D - NEI 04-02 Non-Power Operational Modes Transition

NFPA 805 Section 1.3.1 Nuclear Safety Goal

The nuclear safety goal is to provide reasonable assurance that a fire during any operational mode and plant configuration will not prevent the plant from achieving and maintaining the fuel in a safe and stable condition.

FAQ 07-0040 Implementing Guidance F.2

Identify Components and Cables

The identification of systems and components to be included in this NPO Review begins with the identification of the plant operational states that need to be considered.

Identify the various operational states that a plant goes through during NPO, and which ones are the most risk significant.

Review

The CNP Non-Power Operations (NPO) Transition Review is documented in Technical Evaluation R1900-005-001. The following plant operating states (POS) were considered for this review:

POS 1: This POS starts when the RHR system is put into service. The RCS is closed such that a steam generator could be used for decay heat removal, if the secondary side of a steam generator is filled. The RCS may have a bubble in the pressurizer. This POS ends when the RCS is vented such that the steam generators cannot sustain core heat removal. This POS typically includes Mode 4 (hot shutdown) and portions of Mode 5 (cold shutdown).

POS 2: This POS begins when the RCS has been vented such that the steam generators cannot sustain core heat removal, and an adequate vent path exists to preclude the RCS from re-pressurizing to a point where the RHR system would need to be isolated and made unavailable. This operational state will include portions of Mode 5 (cold shutdown) and Mode 6 (refueling). This POS includes reduced inventory operations and mid-loop operations with a vented RCS.

POS 3: This POS represents the shutdown condition when the refueling cavity water level is at or above the minimum level required for movement of irradiated fuel assemblies with containment as defined by Technical Specifications. This POS occurs during Mode 6.

The following Key Safety Functions (KSF) identified in PMP-4100-SDR-001 were evaluated against the above POSs for inclusion in the NPO transition review:

- Shutdown Cooling
- Inventory Control
- Reactivity Control
- Containment Status
- 4kV Electrical Power Sources
- Electric Power Distribution
- Service Water Systems
- Spent Fuel Pit Cooling

Attachment D - NEI 04-02 Non-Power Operational Modes Transition

NFPA 805 Section 1.3.1 Nuclear Safety Goal

The evaluation resulted in the exclusion of the Containment Control and Spent Fuel Pool Cooling KSFs from further consideration. Containment access and closure is administratively controlled with requirements for when and how to establish closure within the necessary timeframes. Spent fuel pool cooling time-to-boil calculations identify sufficient time to arrange alternate mitigation strategies to protect the spent fuel including those identified in the Fire Pre-Plan. Alternate strategies include inventory makeup from demineralized water system, RWST, CVCS HUT, and fire main. Manual addition of boron to maintain required concentration is also possible. All other KSFs identified above were explicitly modeled in the NPO Analysis Database (Genesis Solutions Suite, SAFE Module).

As documented in Technical Evaluation R1900-005-001, equipment was selected based on the systems identified for meeting each applicable KSF in PMP-4100-SDR-001 and 1(2)-OHP-5030-001-002. The various modes of operation for each system used to satisfy each KSF were reviewed. A comprehensive list of equipment was developed. Where applicable, the NPO selected equipments functional requirement was reviewed against the functions previously analyzed for the at-power analysis; and cable selection performed as necessary per applicable project procedures.

The equipment and cables were logically tied and related to the applicable KSF success paths. Power supplies and other supporting components such as interlocks were also identified, listed, and tied with their component and KSF success paths in the analysis database. The selected components were flagged as NPO within the database to allow 'pinch point' analysis by fire area.

Unit Applicability 1, 2

Reference Document

Technical Evaluation R1900-005-001, Non-Power Operation Modes Transition Review, Rev 0
PMP-4100-SDR-001, Plant Shutdown Safety and Risk Management, Rev 22
1-OHP-5030-001-002, Outage Risk and Technical Specification Monitoring, Rev 13
2-OHP-5030-001-002, Outage Risk and Technical Specification Monitoring, Rev 12
12-EHP-2270-SSA-004, Safe Shutdown Cable And Associated Circuit Analysis, Rev 2

Attachment D - NEI 04-02 Non-Power Operational Modes Transition

NFPA 805 Section 1.3.1 Nuclear Safety Goal

The nuclear safety goal is to provide reasonable assurance that a fire during any operational mode and plant configuration will not prevent the plant from achieving and maintaining the fuel in a safe and stable condition.

FAQ 07-0040 Implementing Guidance F.3

Perform Fire Area Assessments (Identify pinch points)

Identify locations where:

- Fires may cause damage to the equipment (and cabling) credited above, or
- KSFs are achieved solely by crediting recovery actions, e.g., alignment of gravity feed.

Fire modeling may be used to determine if postulated fires in a fire area are expected to damage equipment (and cabling) thereby eliminating a pinch point. Fire modeling should include a treatment of safety margin (Maximum Expected Fire Scenario (MEFS)/Limiting Fire Scenario (LFS) or other treatment) to account for uncertainties/accuracy of the fire model used.

Review

A deterministic fire separation analysis was performed as documented in Technical Evaluation R1900-005-001 to identify pinch points (i.e., areas where redundant equipment and cables credited for a given KSF fail due to fire damage). Identified pinch points were resolved using engineering justifications including the use of recovery actions or maintaining the equipment of concern free of fire damage through the use of fire protection program controls (i.e., protective actions). A total of fifty-eight (57) fire areas were analyzed at CNP:

- Eleven (11) fire areas were found to have an adequate number of KSF success paths survive the entire contents loss of the fire area.

- Forty-six (46) fire areas were found to have pinch points resulting in the potential loss of one or more KSFs success paths that were addressed through recommended recovery actions or prevented through use of fire protection program controls.

Unit Applicability 1, 2

Reference Document

Technical Evaluation R1900-005-001, Non-Power Operation Modes Transition Review, Rev 0

Attachment D - NEI 04-02 Non-Power Operational Modes Transition

NFPA 805 Section 1.3.1 Nuclear Safety Goal

The nuclear safety goal is to provide reasonable assurance that a fire during any operational mode and plant configuration will not prevent the plant from achieving and maintaining the fuel in a safe and stable condition.

FAQ 07-0040 Implementing Guidance F.4

Manage risks associated with fire-induced vulnerabilities during the outage

During those NPO evolutions where risk is relatively low:

The normal fire protection program defense-in-depth actions are credited for addressing the risk impact of those fires that potentially impact one or more trains of equipment that provide a KSF required during non-power operations, but would not be expected to cause the total loss of that KSF. The following actions are considered to be adequate to address minor losses of system capability or redundancy:

- Control of Ignition Sources
- Hot Work (cutting, welding and/or grinding)
- Temporary Electrical Installations
- Electric portable space heaters
- Control of Combustibles
- Transient fire hazards
- Modifications
- Flammable and Combustible liquids and gases
- Compensatory Actions for fire protection system impairments
- Openings in fire barriers
- Inoperable fire detectors or detection systems
- Inoperable fire suppression systems
- Housekeeping

Ensure that the normal fire protection defense-in-depth features are applicable during NPO modes.

During those NPO evolutions that are defined as HREs:

Additional fire protection defense in depth measures will be taken during HREs by:

- Managing risk in fire areas that contain known pinch points.
- Managing risk in fire areas the where pinch points may arise because of equipment taken out of service.

NUMARC 91-06 discusses the development of outage plans and schedules. A key element of that process is to ensure the KSFs perform as needed during the various outage evolutions. During outage planning, the NPO Fire Area Assessment should be reviewed to identify areas of single-point KSF vulnerability during higher risk evolutions to develop any needed contingency plans/actions. For those areas consider combinations of the following options to reduce fire risk depending upon the significance of the potential damage.

Attachment D - NEI 04-02 Non-Power Operational Modes Transition

NFPA 805 Section 1.3.1 Nuclear Safety Goal

- Prohibition or limitation of hot work in fire areas during periods of increased vulnerability.
- Verification of operable detection and /or suppression in the vulnerable areas.
- Prohibition or limitation of combustible materials in fire areas during periods of increased vulnerability.
- Plant lineup modifications (removing power from equipment once it is placed in its desired position).
- Provision of additional fire patrols at periodic intervals or other appropriate compensatory measures (such as surveillance cameras) during increased vulnerability.
- Use of recovery actions to mitigate potential losses of key safety functions.
- Identification and monitoring in-situ ignition sources for "fire precursors" (e.g., equipment temperatures).
- Reschedule the work to a period with lower risk or higher DID.

In addition, for KSF Equipment removed from service during the HREs, the impact should be evaluated based on KSF Equipment status and the NPO Fire Area Assessment to develop needed contingency plans/actions.

Review

Per PMP-2291-OUT-001, outage planning and implementation considers the potential introduction of hazards such as fire posed by the level and scope of activities in a given area of the plant and establishes compensatory measures and controls as appropriate.

In addition, due to the credited system cross-tie features at CNP, 1(2)-OHP-4030-066-4025 provides guidelines that constitute the risk management requirements for Mode 5, Mode 6, or defueled outages in compliance with the Appendix R Alternate Safe Shutdown requirements. These procedures provide instructions to demonstrate that Unit 1 (Unit 2) equipment required to support Unit 2 (Unit 1) Appendix R Safe Shutdown is available, while Unit 1 (Unit 2) remains in an extended outage status or Unit 1 (Unit 2) is transitioning down to Modes 4, 5, 6 or defueled during normal outages.

Each fire area was analyzed for NPO Modes as documented in Technical Evaluation R1900-005-001. Fire areas with identified pinch points were evaluated and plant controls considered that are consistent with FAQ 07-0040 to minimize fire risk. In order to preclude or mitigate the KSF failures in certain fire areas, enhancements will be developed. These enhancements include planned revisions to the procedures identified above and other plant procedures (e.g., EOPs, etc), as necessary. These revisions will incorporate the insights and strategies documented in R1900-005-001 for the plant to deal with a fire event during HREs. The strategies will include but not be limited to the following:

- Prohibition or limitation of hot work in fire areas during periods of increased vulnerability.
- Verification of operable detection and /or suppression in the vulnerable areas.
- Prohibition or limitation of combustible materials in fire areas during periods of increased vulnerability.
- Plant lineup modifications (removing power from equipment once it is placed in its desired position).
- Provision of additional fire patrols at periodic intervals or other appropriate compensatory

Attachment D - NEI 04-02 Non-Power Operational Modes Transition

NFPA 805 Section 1.3.1 Nuclear Safety Goal

measures (such as surveillance cameras) during increased vulnerability.
• Use of recovery actions to mitigate potential losses of key safety functions.

Unit Applicability 1, 2

Reference Document

Technical Evaluation R1900-005-001, Non-Power Operation Modes Transition Review, Rev 0
PMP-4100-SDR-001, Plant Shutdown Safety and Risk Management, Rev 22
PMP-2291-OUT-001, Work Control Process - Outage Management, Rev 22
1-OHP-4030-066-4025 "Unit 1 Appendix R and Ventilation Requirements for Unit 2" Rev 12
2-OHP-4030-066-4025 "Unit 2 Appendix R and Ventilation Requirements for Unit 1" Rev 9

F. Fire-Induced Multiple Spurious Operations Resolution

7 Pages

MSO Process Summary

As described below, the following steps were performed in accordance with guidance provided in FAQ 07-0038, Revision 3.

Step 1 – Identify potential MSOs of concern

Information sources that may be used as input include:

- Post-fire safe shutdown analysis (NEI 00-01, Revision 1, Chapter 3).
- Generic lists of MSOs (e.g., from Owners Groups and/or later versions of NEI 00-01, if endorsed by NRC for use in assessing MSOs).
- Self assessment results (e.g., NEI 04-06 assessments performed to addressed RIS 2004-03).
- PRA insights (e.g., NEI 00-01 Revision 1, Appendix F).
- Operating Experience (e.g., licensee event reports, NRC Inspection Findings, etc.).

Results of Step 1:

The CNP MSO identification process started with an extensive review of plant systems and drawings to determine potential pathways. The initial review was conducted using the existing models and engineering documentation to identify functional failure paths that would be important to risk. This initial review was then supplemented by generic industry lists. The following data sources were used as input to the overall assessment of MSOs at CNP. The CNP MSO identification process resulted in a list of potential MSO pathways for consideration by the MSO Expert Panel.

- CNP Calculation No. PRA-FIRE-17663-002, "Fire PRA Component Selection" and the associated Component Selection Task Plan.
- The CNP Safe Shutdown Capability Analysis (SSCA).
- PWROG Generic MSO List (WCAP-16933-NP).
- Miscellaneous operating experience.
- PRA Insights from the Internal Events PRA (1Q08-MSPI model of record).

Step 2 – Conduct an expert panel to assess plant specific vulnerabilities (e.g., per NEI 00-01, Rev. 1 Section F.4.2).

The expert panel should focus on system and component interactions that could impact nuclear safety. This information will be used in later tasks to identify cables and potential locations where vulnerabilities could exist.

The documentation of the results of the expert panel should include how the expert panel was conducted including the members of the expert panel, their experience, education, and areas of expertise. The documentation should include the list of MSOs reviewed as well as the source for each MSO. This documentation should provide a list of the MSOs that were included in the PRA and a separate list of MSOs that were not kept for further analysis (and the reasons for rejecting these MSOs for further analysis)

Describe the expert panel process (e.g., when it was held, what training was provided to the panel members, what analyses were reviewed to identify MSOs, how was consensus achieved

on which MSOs to keep and any dispute resolution process criteria used in decision process, etc.)

[Note: The physical location of the cables of concern (e.g., fire zone/area routing of the identified MSO cables), if known, may be used at this step in the process to focus the scope of the detailed review in further steps.

Results of Step 2:

An initial MSO Expert Panel review was conducted at CNP in July 2007. A training session for the panel members was conducted prior to starting the actual assessment and the expert panel followed the project instruction as documented in the final calculation. The results of the MSO Expert Panel review were documented in CNP Calculation PRA-FIRE-17663-002B-LAR, "Multiple Spurious Operation Expert Panel". The calculation also includes:

- The project instruction that was used as the training materials.
- The qualifications (i.e., education, experience, and areas of expertise) for each of the MSO Expert Panel participants.
- A list of the MSOs that were reviewed.
- The source of the MSOs that were reviewed (i.e., industry list, plant-specific, "what if" review, etc.).
- Expert Panel Project Instruction.

The results of the MSO Expert Panel review were integrated into the NFPA 805 NSCA, CNP Technical Evaluation No. R1900-0024-001, "Nuclear Safety Capability Assessment" and provided as input into the Fire PRA development, CNP Calculation PRA-FIRE-17663-005, "Fire PRA Fire Induced Risk Model".

A second MSO Expert Panel review was conducted at CNP in January 2008. The second MSO expert panel discussed and dispositioned open items from the original MSO Expert Panel and addressed new generic MSOs that had been identified since the first panel. The results of the second panel review were documented in an update to the original calculation. In October 2009, the MSO expert panel report was reviewed internally and by the peer review team and updated to include the generic MSO list from WCAP-16933-NP that had been released in April 2009. The June 2010 update to the generic WCAP list (Revision 1) was reviewed in January 2011 and changes in the generic MSO Expert Panel list were incorporated into the current CNP MSO Expert Panel report. The CNP Expert Panel report describes the processes used to achieve consensus and to establish the basis for MSO rejection. The final product of this step was a report that assessed the MSO pathways that apply to the CNP.

Step 3 – Update the Fire PRA model and NSCA to include the MSOs of concern

This step includes the:

- Identification of equipment (NUREG/CR-6850 Task 2).
- Identification of cables that, if damaged by fire, could result in the spurious operation (NUREG/CR-6850 Task 3, Task 9).
- Identify routing of the cables identified above, including associating that routing with fire areas, fire zones and/or Fire PRA physical analysis units, as applicable.

Include the equipment/cables of concern in the Nuclear Safety Capability Assessment (NSCA). Including the equipment and cable information in the NSCA does not necessarily imply that the

interaction is possible since separation/protection may exist throughout the plant fire areas such that the interaction is not possible).

Note: Instances may exist where conditions associated with MSOs do not require update of the Fire PRA and NSCA analysis. For example, Fire PRA analysis performed in accordance with NUREG/CR-6850 Task 2, Component Selection, may determine that the particular interaction may not lead to core damage, or pre-existing equipment and cable routing information may determine that the particular MSO interaction is not physically possible. In other instances, the update of the Fire PRA may not be warranted if the contribution is negligible. The rationale for exclusion of identified MSOs from the Fire PRA and NSCA should be documented in CNP Calculation PRA-FIRE-17663-002B-LAR and Technical Evaluation R1900-0024-001, respectively. Configuration control mechanisms will be reviewed to provide reasonable confidence that the exclusion basis remains valid.

Results of Step 3:

The results of the expert panel were included in the component selection report (PRA-FIRE-17663-002-LAR associated with NUREG/CR-6850 Task 2) of the CNP Fire PRA. The CNP component selection report identified components associated with spurious operations, including multiple spurious operations, based on the post-fire safe shutdown analysis and the MSO expert panel review. The CNP fire-induced risk model (PRA-FIRE-17663-005-LAR associated with NUREG/CR-6850 Task 5) of the CNP Fire PRA was then modified to explicitly model those MSO pathways that apply to CNP as identified in MSO Steps 1 and 2.

The results of the fire PRA model update are included in the following calculations and engineering analyses:

- CNP Calculation No. PRA-FIRE-17663-002-LAR, "Fire PRA Component Selection"
- CNP Technical Evaluation No. R1900-0043-0001, "Fire PRA Cable Selection and Routing"
- CNP Calculation No. PRA-FIRE-17663-005-LAR, "Fire PRA Fire-Induced Risk Model"
- CNP Technical Evaluation No. R1900-0049-0001, "Detailed Circuit Failure Analysis"

These calculations and engineering analyses include:

- Correlation of safe shutdown components and PRA basic events,
- Logic Changes made to the Fire PRA model to account for MSO scenarios relevant to fire but not already captured by the Internal Events PRA

The MSO combination of components of concern were then evaluated for inclusion into the CNP NSCA model. As necessary, components were added to the NSCA Equipment List and Logics; and circuit analysis and cable routing was performed. The results are documented in CNP Technical Evaluation R1900-0024-001, "Nuclear Safety Capability Assessment".

[Note: Instances existed where conditions associated with MSOs did not require update of the Fire PRA and NSCA analysis. For example, Fire PRA analysis performed in accordance with NUREG/CR-6850 Task 2, Component Selection, determined that the particular interaction would not lead to core damage, or pre-existing equipment and cable routing information determined that the particular MSO interaction was not physically possible. In other instances, update of the Fire PRA was not warranted since the contribution was negligible. The rationale for exclusion of identified MSOs from the Fire PRA and NSCA was documented in CNP Calculation PRA-FIRE-17663-002B-LAR and Technical Evaluation R1900-0024-001,

respectively. Configuration control mechanisms will be reviewed to provide reasonable confidence that the exclusion basis remains valid.]

Step 4 – Evaluate for NFPA 805 Compliance

The MSO combinations included in the NSCA should be evaluated with respect to compliance with the deterministic requirements of NFPA 805, as discussed in Section 4.2.3 of NFPA 805. For those situations in which the MSO combination does not meet the deterministic requirements of NFPA 805 (i.e., a VFDR), the issue with the components and associated cables should be mitigated by other means (e.g., performance-based approach per Section 4.2.4 of NFPA 805, plant modification, etc.)

The performance-based approach may include the use of feasible and reliable recovery actions. The use of recovery actions to demonstrate the availability of a success path for the nuclear safety performance criteria requires that the additional risk presented by the use of these recovery actions be evaluated (NFPA 805 Section 4.2.4).

Results of Step 4:

The CNP fire PRA quantified the fire-induced risk model containing the MSO pathways. The quantification addressed the specific electrical cables and the failure mode in each fire area and fire zone that was quantified. Thus, the MSO contribution is included in the fire PRA results, and in the fire PRA results associated with evaluation of VFDRs as documented in applicable fire risk evaluations.

The MSO combination of components of concern were also evaluated as part of the CNP NSCA (i.e., Technical Evaluation R1900-0024-001, "Nuclear Safety Capability Assessment"). For cases where the MSO combination of components did not meet the requirements for deterministic compliance, the MSO combination of components were identified as VFDRs and added to the scope of the Fire Risk Evaluations.

The process and results associated with the performance of Fire Risk Evaluations are summarized in Section 4.5 of the TR.

Step 5 - Document Results

The results of the process should be documented. The results should provide a detailed description of the MSO identification, analysis, disposition, and evaluation results (e.g., references used to identify MSOs; the composition of the expert panel, the expert panel process, and the results of the expert panel process; disposition and evaluation results for each MSO, etc.). High level methodology utilized as part of the transition process should be included in the 10 CFR 50.48(c) LAR/TR.

Results of Step 5:

The MSO process and results are documented in the following calculation files and reports:

- CNP Calculation No. PRA-FIRE-17663-002-LAR, "Fire PRA Component Selection"
- CNP Report No. PRA-FIRE-17663-002B-LAR, "Multiple Spurious Operations Expert Panel Report"
- CNP Technical Evaluation No. R1900-0043-0001, "Fire PRA Cable Selection and Routing"

- CNP Technical Evaluation No. R1900-0024-001, "Nuclear Safety Capability Assessment"
- CNP Calculation No. PRA-FIRE-17663-005-LAR, "Fire PRA Fire Induced Risk Model"
- CNP Technical Evaluation No. R1900-0049-0001, "Detailed Circuit Failure Analysis"
- CNP Calculation No. PRA-FIRE-17663-010-LAR, "Fire PRA Circuit Failure Likelihood Analysis"
- CNP Calculation No. PRA-FIRE-17663-011A-LAR, "Fire PRA Quantification of Individual Areas"
- CNP Calculation No. PRA-FIRE-17663-011B-LAR, "Fire PRA Main Control Room Analysis"
- CNP Calculation No. PRA-FIRE-17663-011C-LAR, "Fire PRA Multi-Compartment Analysis"

These calculations and engineering analyses include:

- Correlation of PRA basic events and safe shutdown components
- A listing of MSOs considered with documentation of their disposition
- Logic Changes made to the Fire PRA model to account for MSO scenarios relevant to fire but not already captured by the Internal Events PRA
- MSO combination of components added to the NSCA Equipment List and Logics as appropriate; and circuit analysis and cable routing performed.

Summary of Results and Risk Insights

As part of Step 4 of the process outlined above, MSO combinations were reviewed for their impact on deterministic compliance (i.e., fire area reviews to determine if the same fire could result in the potential MSO combinations). As part of the process, VFDRs were created where the deterministic requirements of NFPA 805 Section 4.2.3 were not met. These VFDRs were addressed by demonstrating compliance with the performance-based approach of Section 4.2.4 of NFPA 805 (See Section 4.5 and Attachment C of this document).

Note that the spurious operations reviewed as part of the process included components that were part of the original CNP 10 CFR 50 Appendix R post-fire safe shutdown analysis, as well as components and interactions that were added following a plant-specific review of functional failures and evolved industry issues. No specific distinction is made in the program documentation whether the interaction is related to a single spurious operation or MSO, since the risk-informed approach using the Fire PRA provides an integrated plant response model.

In addition to the process defined above another review was performed to gain risk insights related to fire-induced MSOs.

Spurious operations, both single and multiple, have an impact on the overall fire risk and are included in the fire PRA model. Fire-induced spurious operations can generate control signals that can lead to an initiating event (e.g., a fire-induced spurious control signal directs a pressurizer PORV to transfer open), but can also affect the mitigation of initiators such as impacting Auxiliary Feedwater (AFW) supplying a decay heat removal heat sink or by impacting the ability of a SG PORV to vent steam. Given the potential significance of fire-induced MSOs, an expert panel was held at CNP to systematically search for and identify MSO failures not already captured by the Internal Events PRA model, which was used as the starting point for the

fire PRA. Logic modifications were made in the fire PRA (3Q09-FPRA) to incorporate several fire-induced MSO-related failures not already captured by the base model.

While difficult to quantify the impact of MSOs (since the PRA results contain single spurious as well as multiple spurious events), the contribution of fire-induced MSOs is potentially overstated in the CNP Fire PRA due to limitations in the industry's knowledge of the conditional probability and duration of fire-induced spurious operations. Nonetheless fire-induced MSOs are included in the fire PRA model, and their associated risk is included in the quantification of each fire scenario, the total plant fire risk, and evaluation of each VFDR. The VFDR's are identified in Attachment C, Table B-3 and a summary of the Fire PRA results is provided in Attachment W.

H. NFPA 805 Frequently Asked Question Summary Table

3 Pages

Note: The NFPA 805 FAQ process will continue through the transition of non-pilot NFPA 805 transition plants. Final closure of the FAQs will occur when RG 1.205, which endorses the new revision of NEI 04-02, is approved by the NRC. It is expected that additional FAQs will be written and existing FAQs will be revised as the pilot plant process continues.

This table includes the approved FAQs that have not been incorporated into the current endorsed revision of NEI 04-02 and are utilized, as applicable, in this submittal:

Table H-1 - NEI 04-02 FAQs Utilized in LAR Submittal

No.	Rev.	Title	FAQ Ref.	Closure Memo
06-0008	9	NFPA 805 Fire Protection Engineering Evaluations	ML090560170	ML073380976
06-0022	3	Acceptable Electrical Cable Construction Tests	ML090830220	ML091240278
07-0030	5	Establishing Recovery Actions	ML103090602	ML110070485
07-0032	2	Clarification of 10 CFR 50.48(c), 10 CFR 50.48(a) and GDC 3 clarification	ML081300697	ML081400292
07-0035	2	Bus Duct Counting Guidance for High Energy Arcing Faults	ML091610189	ML091620572
07-0038	3	Lessons learned on Multiple Spurious Operations	ML103090608	ML110140242
07-0039	2	Lessons Learned - NEI B-2 Table	ML091420138	ML091320068
07-0040	4	Non-Power Operations Clarification	ML082070249	ML082200528
07-0042	0	Fire Propagation from Electrical Cabinets	ML080230438 ML091460350	ML092110537
08-0043	1	Electrical Cabinet Fire Location	ML083540152 ML091470266	ML092120448
08-0044	0	Large Oil Fires	ML081200099 ML091540179	ML092110516
08-0046	0	Incipient Fire Detection Systems	ML081200120 ML093220197	ML093220426
08-0047	1	Spurious Operation Probability	ML082770662	ML082950750

Table H-1 - NEI 04-02 FAQs Utilized in LAR Submittal

No.	Rev.	Title	FAQ Ref.	Closure Memo
08-0048	0	Fire Ignition Frequency	ML081200291 ML092180383	ML092190457
08-0049	0	Cable Fires	ML081200309 ML091470242	ML092100274
08-0050	0	Non Suppression Probability	ML081200318 ML092510044	ML092190555
08-0051	0	Hot Short Duration	ML083400188 ML100820346	ML100900052
08-0052	0	Transient Fire Growth Rate and Control Room Non-Suppression	ML081500500 ML091590505	ML092120501
07-0054*	1	Demonstrating Compliance with Chapter 4 of NFPA 805	ML103510379	ML110140183
09-0056	2	Radioactive Release Transition	ML102810600	ML102920405
08-0057	3	New Shutdown Strategy	ML100330863	ML100960568

* Note: The FAQ submittal number was 08-0054 but the NRC closure memo for the FAQ was listed as 07-0054. 07-0054 was used to be consistent with the Closure Memo.

In addition, this LAR includes revised guidance contained in FAQ 10-0059, Revision 1, NFPA 805 Monitoring (ML111180481), which is currently under review by the NRC. The guidance contained in the FAQ is a clarification of the screening criteria, action levels and definition of fire compartment in the Fire PRA that is currently provided in NEI 04-02, Revision 2. The clarification is required to assist licensees in the development and implementation of the monitoring program for NFPA 805 as a result of lessons learned during the development of the monitoring program for the pilot plants. Any revisions to the process provided in the FAQ (and this LAR) related to the monitoring program as a result of NRC review and approval will be addressed, if applicable, as part of NFPA 805 amendment implementation (See Attachment S).

J. Fire Modeling V&V

13 Pages

Attachment J – Table J-1 – V & V Basis for Fire Models / Model Correlations Used

Calculation	Application	V & V Basis	Discussion
Flame Height (Method of Heskestad)	Calculates the vertical extension of the flame region of a fire.	• NUREG-1805, Chapter 3, 2004 • NUREG-1824, Volume 3, 2007 • SFPE Handbook, 4th Edition, Chapter 2-1, Heskestad, 2008	• The correlation is used in the NUREG-1805 fire model, for which V&V was documented in NUREG-1824. • The correlation is documented in an authoritative publication of the SFPE Handbook of Fire Protection Engineering. • The correlation is used within the limits of its range of applicability.
Plume Centerline Temperature (Method of Heskestad)	Calculates the vertical separation distance, based on temperature, to a target in order to determine the vertical extent of the ZOI.	• NUREG-1805, Chapter 9, 2004 • NUREG-1824, Volume 3, 2007 • SFPE Handbook, 4th Edition, Chapter 2-1, Heskestad, 2008 • NUREG/CR-6850, Appendix H - Damage Criteria, 2005	• The correlation is used in the NUREG-1805 fire model, for which V&V was documented in NUREG-1824. • The correlation is documented in an authoritative publication of the SFPE Handbook of Fire Protection Engineering. • The correlation is used within the limits of its range of applicability. • NUREG/CR-6850 generic screening damage criteria is used, which is considered conservative.

Attachment J – Table J-1 – V & V Basis for Fire Models / Model Correlations Used

Calculation	Application	V & V Basis	Discussion
Radiant Heat Flux (Point Source Method)	Calculates the horizontal separation distance, based on heat flux, to a target in order to determine the horizontal extent of the ZOI.	• NUREG-1805, Chapter 5. 2004 • NUREG-1824, , Volume 4, 2007 • SFPE Handbook, 4th edition, Chapter 3-10, Beyler, C., 2008 • NUREG/CR-6850, Appendix H - Damage Criteria, 2005	• The correlation is used in the NUREG-1805 fire model, for which V&V was documented in NUREG-1824. • The correlation is documented in an authoritative publication of the SFPE Handbook of Fire Protection Engineering. • The correlation is used within the limits of its range of applicability. • NUREG/CR-6850 generic screening damage criteria is used, which is considered conservative.
Plume Radius (Method of Heskestad)	Calculates the horizontal radius, based on temperature, of the plume at a given height.	• FIVE-Rev1, Referenced by EPRI Report 1002981, 2002 • SFPE Handbook, 4th Edition, Chapter 2-1, Heskestad, G., 2008 • NUREG/CR-6850, Appendix H - Damage Criteria, 2005	• The correlation is used in the FIVE-Rev1 fire model. • The correlation is documented in an authoritative publication of the SFPE Handbook of Fire Protection Engineering. • NUREG/CR-6850 generic screening damage criteria is used, which is considered conservative.

Attachment J – Table J-1 – V & V Basis for Fire Models / Model Correlations Used

Calculation	Application	V & V Basis	Discussion
Hot Gas Layer (Method of MQH)	Calculates the hot gas layer temperature for a room with natural ventilation.	• NUREG-1805, Chapter 2, 2004 • NUREG-1824, Volume 3, 2007 • SFPE Handbook, 4th Edition, Chapter 3-6, Walton W. and Thomas, P., 2008	• The correlation is used in the NUREG-1805 fire model, for which V&V was documented in NUREG-1824. • The correlation is documented in an authoritative publication of the SFPE Handbook of Fire Protection Engineering. • The correlation is used within the limits of its range of applicability.
Hot Gas Layer (Method of Beyler)	Calculates the hot gas layer temperature for a closed compartment with no ventilation.	• NUREG-1805, Chapter 2, 2004 • NUREG-1824, Volume 3, 2007 • SFPE Handbook, 4th Edition, Chapter 3-6, Walton W. and Thomas, P., 2008	• The correlation is used in the NUREG-1805 fire model, for which V&V was documented in NUREG-1824. • The correlation is documented in an authoritative publication of the SFPE Handbook of Fire Protection Engineering. • The correlation is used within the limits of its range of applicability.
Hot Gas Layer (Method of Foote, Pagni, and Alvares [FPA])	Calculates the hot gas layer temperature for a room with forced ventilation.	• NUREG-1805, Chapter 2, 2004 • NUREG-1824, Volume 3, 2007 • SFPE Handbook, 4th Edition, Chapter 3-6, Walton W. and Thomas, P., 2008	• The correlation is used in the NUREG-1805 fire model, for which V&V was documented in NUREG-1824. • The correlation is documented in an authoritative publication of the SFPE Handbook of Fire Protection Engineering. • The correlation is used within the limits of its range of applicability.

Attachment J – Table J-1 – V & V Basis for Fire Models / Model Correlations Used

Calculation	Application	V & V Basis	Discussion
Hot Gas Layer (Method of Deal and Beyler)	Calculates the hot gas layer temperature for a room with forced ventilation.	• NUREG-1805, Chapter 2, 2004 • NUREG-1824, Volume 3, 2007 • SFPE Handbook, 4th Edition, Chapter 3-6, Walton W. and Thomas, P., 2008	• The correlation is used in the NUREG-1805 fire model, for which V&V was documented in NUREG-1824. • The correlation is documented in an authoritative publication of the SFPE Handbook of Fire Protection Engineering. • The correlation is used within the limits of its range of applicability.
Ceiling Jet Temperature (Method of Alpert)	Calculates the horizontal separation distance, based on temperature at the ceiling of a room, to a target in order to determine the horizontal extent of the ZOI.	• FIVE-Rev1, Referenced by EPRI Report 1002981, 2002 • NUREG-1824, Volume 4, 2007 • SFPE Handbook, 4th Edition, Chapter 2-2, Alpert, R., 2008 • NUREG/CR-6850, Appendix H - Damage Criteria, 2005	• The correlation is used in the FIVE-Rev1 fire model, for which V&V was documented in NUREG-1824. • The correlation is documented in an authoritative publication of the SFPE Handbook of Fire Protection Engineering. • The correlation is used within the limits of its range of applicability. • NUREG/CR-6850 generic screening damage criteria is used, which is considered conservative.

Attachment J – Table J-1 – V & V Basis for Fire Models / Model Correlations Used

Calculation	Application	V & V Basis	Discussion
Hot Gas Layer Calculations using Fire Dynamics Simulator (Version 5)	Used to calculate the hot gas layer temperatures for various compartments, and the layer height.	• FDS Version 5 • NIST Special Publication 1018-5, Volume 2: Verification • NIST Special Publication 1018-5, Volume 3: Validation • NUREG-1824, Volume 7, 2007	• V&V of the FDS is documented in NIST Special Publication 1018-5. • The V&V of FDS specifically for Nuclear Power Plant applications has also been documented in NUREG-1824. • It was concluded that FDS models the hot gas layer height, temperature and smoke concentration in an appropriate manner. Furthermore, the predictions of HGL height and temperature are deemed to be within the bounds of experimental uncertainty.
Hot Gas Layer Calculations using CFAST (Version 6)	Calculates the upper and lower layer temperatures for various compartments, the layer height, and smoke obscuration.	• NIST Special Publication 1086, 2008 • CFAST Version 6 • NUREG-1824, Volume 5, 2007	• V&V of the CFAST code is documented in the NIST Special Publication 1086. • The V&V of CFAST specifically for Nuclear Power Plant applications has also been documented in NUREG-1824. • It was concluded that CFAST models the hot gas layer height, temperature and smoke concentration in an appropriate manner. Furthermore, the predictions of HGL height and temperature are deemed to be within the bounds of experimental uncertainty.

Attachment J – Table J-1 – V & V Basis for Fire Models / Model Correlations Used

Calculation	Application	V & V Basis	Discussion
Smoke Detection Actuation Correlation (Method of Heskestad and Delichatsios)	Alpert Ceiling Jet used to determine temperature and Heskestad and Delichatsios temperature to smoke density for smoke detection timing estimates.	• NUREG-1805, Chapter 11, 2004 • NUREG-1824, Volume 4, 2007 • SFPE Handbook, 4th Edition, Chapter 4-1, Custer R., Meacham B., and Schifiliti, R., 2008 • SFPE Handbook, 4th Edition, Chapter 2-2, Alpert, R., 2008	• The smoke detection correlation is used in the NUREG-1805 fire model. • Alpert's ceiling jet correlation V&V is documented in NUREG-1824. • The temperature to smoke density correlation is documented in an authoritative publication of the SFPE Handbook of Fire Protection Engineering. • The correlation is used within the limits of its range of applicability.
Heat Detection Actuation Correlation	Alpert Ceiling Jet used to determine temperature for heat detection timing estimates.	• NUREG-1805, Chapter 11, 2004 • NFPA Handbook, 19th Edition, Chapter 3-9, Budnick, E., Evans, D., and Nelson, H., 2003	• The heat detection correlation is used in the NUREG-1805 fire model. • The correlation is documented in an authoritative publication of the NFPA Fire Protection Handbook. • The correlation is used within the limits of its range of applicability.
Sprinkler Activation Correlation	Used to estimate sprinkler actuation timing based on ceiling jet temperature, velocity, and thermal response of sprinkler.	• NUREG-1805, Chapter 10, 2004 • NFPA Handbook, 19th Edition, Chapter 3-9, Budnick, E., Evans, D., and Nelson, H., 2003	• The sprinkler actuation correlation is used in the NUREG-1805 fire model. • The correlation is documented in an authoritative publication of the NFPA Fire Protection Handbook. • The correlation is used within the limits of its range of applicability.

Attachment J – Table J-1 – V & V Basis for Fire Models / Model Correlations Used

Calculation	Application	V & V Basis	Discussion
Control Room Abandonment Calculation using CFAST	Evaluates the time at which control room abandonment is necessary based on smoke obscuration and average HGL temperature.	• NIST Special Publication 1086, 2008 • CFAST Version 6 • NUREG-1824, Volume 6, 2007 • NUREG/CR-6850, Appendix H - Damage Criteria, 2005	• V&V of the CFAST code is documented in the NIST Special Publication 1086. • The V&V of CFAST specifically for Nuclear Power Plant applications has also been documented in NUREG-1824. • It was concluded that CFAST models the hot gas layer height, temperature and smoke concentration in an appropriate manner. Furthermore, the predictions of HGL height and temperature are deemed to be within the bounds of experimental uncertainty. • NUREG/CR-6850 generic screening damage criteria is used, which is considered conservative.

Attachment J – Table J-1 – V & V Basis for Fire Models / Model Correlations Used

Calculation	Application	V & V Basis	Discussion
Temperature Sensitive Equipment Hot Gas Layer Study	Determine the upper and lower gas layer temperatures for various compartments, and the layer height, for use in assessing damage to temperature sensitive equipment.	• NIST Special Publication 1086, 2008 • CFAST Version 6 • NUREG-1824, Volume 6, 2007 • NUREG/CR-6850, Appendix H - Damage Criteria, 2005	• V&V of the CFAST code is documented in the NIST Special Publication 1086. • The V&V of CFAST specifically for Nuclear Power Plant applications has also been documented in NUREG-1824. • It was concluded that CFAST models the hot gas layer height, temperature and smoke concentration in an appropriate manner. Furthermore, the predictions of HGL height and temperature are deemed to be within the bounds of experimental uncertainty. • NUREG/CR-6850 generic screening damage criteria is used, which is considered conservative.

Attachment J – Table J-1 – V & V Basis for Fire Models / Model Correlations Used

Calculation	Application	V & V Basis	Discussion
Temperature Sensitive Equipment Zone of Influence Study	Determine the radiant heat flux ZOI at which temperature sensitive equipment will reach damage thresholds.	• FDS Version 5 • NIST Special Publication 1018-5, Volume 2: Verification • NIST Special Publication 1018-5, Volume 3: Validation • NUREG-1824, Volume 7, 2007 • NUREG/CR-6850, Appendix H - Damage Criteria, 2005	• V&V of the FDS is documented in the NIST Special Publication 1018-5. • The V&V of FDS specifically for Nuclear Power Plant applications has also been documented in NUREG-1824. • It was concluded that FDS models the radiant heat and gas temperature in an appropriate manner. Furthermore, the predictions radiant heat and temperature are deemed to be within the bounds of experimental uncertainty. • NUREG/CR-6850 generic screening damage criteria is used, which is considered conservative.

Attachment J – Table J-1 – V & V Basis for Fire Models / Model Correlations Used

Calculation	Application	V & V Basis	Discussion
Plume/Hot Gas Layer Interaction Study	Determine the point at which hot gas layer and plume interact and establish limits for plume temperature application.	• FDS Version 5 • NIST Special Publication 1018-5, Volume 2: Verification • NIST Special Publication 1018-5, Volume 3: Validation • NUREG-1824, Volume 7, 2007 • NUREG/CR-6850, Appendix H - Damage Criteria, 2005	• V&V of the FDS is documented in NIST Special Publication 1018-5. • The V&V of FDS specifically for Nuclear Power Plant applications has also been documented in NUREG-1824. • It was concluded that FDS models the hot gas layer height, temperature and smoke concentration in an appropriate manner. Furthermore, the predictions of HGL height and temperature are deemed to be within the bounds of experimental uncertainty. • NUREG/CR-6850 generic screening damage criteria is used, which is considered conservative.
Corner and Wall HRR	Determines a heat release rate adjustment factor for fires that are proximate to a wall or corner.	• IMC 0609, Appendix F, 2005 • SFPE Handbook, 4th Edition, Chapter 2-14, Lattimer, 2008	• The correlation is recommended by IMC 0609 for fires near walls and corners. • The correlation is documented in an authoritative publication of the SFPE Handbook of Fire Protection Engineering. • The correlation is used within the limits of its range of applicability.

Attachment J – Table J-1 – V & V Basis for Fire Models / Model Correlations Used

Calculation	Application	V & V Basis	Discussion
Correlation for Heat Release Rates of Cables (Method of Lee)	Used to correlate bench-scale data to heat release rates from cable tray fires.	• NUREG/CR-6850, Appendix R, 2005 • SFPE Handbook, 4th Edition, Chapter 3-1, Babrauskas, 2008	• The correlation is recommended by NUREG/CR-6850. • The correlation is documented in an authoritative publication of the SFPE Handbook of Fire Protection Engineering. • The correlation is used within the limits of its range of applicability.
Correlation for Flame Spread over Horizontal Cable Trays (FLASH-CAT)	Used to predict the growth and spread of a fire within a vertical stack of horizontal cable trays.	• NUREG/CR-7010, Section 9, 2010 • NUREG/CR-6850, Appendix R, 2005	• The correlation is recommended by NUREG/CR-7010 and follows guidance set forth in NUREG/CR-6850. • The FLASH-CAT model is validated in NUREG/CR-7010, Section 9.2.3, through experimentally measured HRRs compared with the predictions of the FLASH-CAT model. • The correlation is used within the limits of its range of applicability.

Attachment J – Table J-1 – V & V Basis for Fire Models / Model Correlations Used

Calculation	Application	V & V Basis	Discussion
Fire Door Closure Calculation using FDS (Version 5)	Evaluates that the door thermal link will activate prior to cable damage.	• FDS Version 5 • NIST Special Publication 1018-5, Volume 2: Verification • NIST Special Publication 1018-5, Volume 3: Validation • NUREG-1824, Volume 7, 2007 • NUREG/CR-6850, Appendix H - Damage Criteria, 2005	• V&V of the FDS is documented in NIST Special Publication 1018-5. • The V&V of FDS specifically for Nuclear Power Plant applications has also been documented in NUREG-1824. • It was concluded that FDS models the hot gas layer height, temperature and smoke concentration in an appropriate manner. Furthermore, the predictions of HGL height and temperature are deemed to be within the bounds of experimental uncertainty. • NUREG/CR-6850 generic screening damage criteria is used, which is considered conservative.

K. Existing Licensing Action Transition

28 Pages

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, Auxiliary Building Lack of Automatic Suppression (Criteria III.G.2.c) - Exemption 7.2

Basis Date: December 23, 1983

To Be Transitioned?: No

Basis: Exemption approval per the NRC SER dated December 23, 1983 provides the following justification for the lack of automatic suppression as required by Section III.G.2.c of Appendix R, which was submitted by I&M Letter No. AEP:NRC:0692E dated March 31, 1983.

-Cubicles are separated by 3-hour rated walls, floors and ceilings.
-Cubicles are provided with 6 inch high curbs.
-Walls between redundant pumps will be upgraded to a 3-hour rating by sealing all penetration openings and installing fire dampers.
-One train of the RHR pump power cables enclosed in a 1-hour rated barrier.
-Combustible loading is low
-Early warning smoke detection system is installed.

The original compliance strategy for Fire Area AA1 was in accordance with III.G.2.c. This area has a lack of automatic suppression therefore an exemption was required. Fire Area AA1 currently complies with Appendix R Section III.G.1 and, therefore, no longer credits this exemption for the lack of an automatic fire suppression. The NFPA 805 transition compliance strategy is in accordance with Section 4.2.3.2, a deterministic approach that relies on 3 hour barriers to separate redundant trains. This exemption is not required and will not be transitioned to the NFPA 805 licensing basis since Section 4.2.3.2 does not require a automatic suppression system installed within in the area.

Applicable Fire Areas:

Fire Area	Fire Area Description
AA1	Unit 1 and Unit 2 Residual Heat Removal and Containment Spray Pump Area (El. 573 ft.)

Licensing Action Documentation:

Initial Exemption Request - I&M Letter No. AEP:NRC:0692E dated March 31, 1983

Per the provision of 10 CFR 50.48(c)(6) and 10 CFR 50.12, I&M requested an exemption from the specific requirements of Appendix R Section III.G.2, i.e., an automatic fire suppression shall be installed. The exemption was requested for Fire Zone 1 RHR/CTS Pump Area Auxiliary Building, El. 573 ft.

Exemption SER - NRC SER dated December 23, 1983

Based on the evaluation the NRC granted the exemption for lack of automatic suppression within the RHR/CTS Pump Area.

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, Transformer Room Unit 1 Lack of Fixed Fire Suppression (Criteria III.G.3) - Exemption 7.3

Basis Date: December 23, 1983

To Be Transitioned?: No

Basis: Exemption approval per the NRC SER dated December 23, 1983 provides the following justification for the lack of fixed fire suppression as required by Section III.G.3 of Appendix R, which was submitted by I&M Letter No. AEP:NRC:0692E dated March 31, 1983.

-3 hour rated walls, floor and ceiling except for the two 1.5 hour rated dampers.
-Manual fire suppression provided.
-Automatic Detection
-Primary electrical equipment within metal cabinets.
-Combustible loading is low.

The original compliance strategy for Fire Area AA13 was in accordance with III.G.3. This area has a lack of fixed fire suppression therefore an exemption was required. Fire Area AA13 currently complies with Appendix R Section III.G.1 and, therefore, no longer credits this exemption for the lack of fixed fire suppression. The NFPA 805 transition compliance strategy is in accordance with Section 4.2.3.2, a deterministic approach that relies on 3 hour barriers to separate redundant trains. This exemption is not required and will not be transitioned to the NFPA 805 licensing basis since Section 4.2.3.2 does not require a fixed suppression system installed within in the area.

Applicable Fire Areas:

Fire Area	Fire Area Description
AA13	Unit 1 Transformer Room (El. 591 ft.)

Licensing Action Documentation:

Initial Exemption Request - I&M Letter No. AEP:NRC:0692E dated March 31, 1983

Per the provisions of 10 CFR 50.48(c)(6) and 10 CFR 50.12, I&M requested an exemption from the specific requirements of Appendix R Section III.G.3, i.e., a fixed fire suppression system in the fire area. The exemption was requested for Fire Zone 14 Unit 1 Tranformer Room.

Exemption SER - NRC SER dated December 23, 1983

Based on the evaluation the NRC granted the exemption for lack of a fixed fire suppression system within the Unit 1 Transformer Room.

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, Transformer Room Unit 2 Lack of Fixed Fire Suppression (Criteria III.G.3) - Exemption 7.4

Basis Date: December 23, 1983

To Be Transitioned?: No

Basis:

Exemption approval per the NRC SER dated December 23, 1983 provides the following justification for the lack of fixed fire suppression as required by Section III.G.3 of Appendix R, which was submitted by I&M Letter No. AEP:NRC:0692E dated March 31, 1983.

-3 hour rated walls, floor and ceiling except for the two 1.5 hour rated dampers.
-Manual fire suppression provided.
-Automatic Detection
-Primary electrical equipment within metal cabinets.
-Combustible loading is low.

The original compliance strategy for Fire Area AA25 was in accordance with III.G.3. This area has a lack of fixed fire suppression therefore an exemption was required. Fire Area AA25 currently complies with Appendix R Section III.G.1, and, therefore, no longer credits this exemption for the lack of fixed fire suppression. The NFPA 805 transition compliance strategy is in accordance with Section 4.2.3.2, a deterministic approach that relies on 3 hour barriers to separate redundant trains. This exemption is not required and will not be transitioned to the NFPA 805 licensing basis since Section 4.2.3.2 does not require a fixed suppression system installed within in the area.

Applicable Fire Areas:

Fire Area	Fire Area Description
AA25	Unit 2 Transformer Room (El. 591 ft.)

Licensing Action Documentation:

Initial Exemption Request - I&M Letter No. AEP:NRC:0692E dated March 31, 1983

Per the provisions of 10 CFR 50.48(c)(6) and 10 CFR 50.12, I&M requested an exemption from the specific requirements of Appendix R Section III.G.3, i.e., a fixed fire suppression system in the fire area. The exemption was requested for Fire Zone 20 Unit 2 Tranformer Room.

Exemption SER - NRC SER dated December 23, 1983

Based on the evaluation the NRC granted the exemption for lack of a fixed fire suppression system within the Unit 2 Transformer Room.

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, Unit 1 ESW Pumps and MCCs Lack of Fixed Fire Suppression (Criteria III.G.3) - Exemption 7.5

Basis Date: December 23, 1983

To Be Transitioned?: No

Basis:

Exemption approval per the NRC SER dated December 23, 1983 provides the following justification for the lack of fixed fire suppression as required by Section III.G.3 of Appendix R, which was submitted by I&M Letter No. AEP:NRC:0692E dated March 31, 1983.

-3 hour rated fire barriers separate the Unit 1 and Unit 2 equipment.
-Manual fire suppression provided.
-Combustible loading is low.
-Automatic detection system

The original compliance strategy for Fire Zones 29A, 29B and 29E was in accordance with III.G.3. This area lacks a fixed fire suppression therefore an exemption was required. Fire Zones 29A, 29B, 29E have been regrouped with Fire Zone 29G and they now form Fire Area AA32. Fire Area AA32 currently complies with Appendix R Section III.G.2.c, and credits Exemption 7.7 for lack of an automatic suppression. The NFPA 805 transition compliance strategy for Fire Area AA32 is in accordance with 4.2.3.3.c a deterministic approach that credits the use of 1-hour rated ERFBS with automatic detection and automatic suppression. This exemption is not required for transition to the NFPA 805 licensing since Exemption 7.7 will be transitioned for Fire Area AA32.

Applicable Fire Areas:

Fire Area	Fire Area Description
AA32	Unit 1 Essential Service Water Pump Area and Unit 1 and Unit 2 Basement Motor Control Center Room (El. 591 ft. and 575 ft.)

Licensing Action Documentation:

Initial Exemption Request - I&M Letter No. AEP:NRC:0692E dated March 31, 1983

Per the provisions of 10 CFR 50(c)(6) and 10 CFR 50.12, I&M requested an exemption from the specific requirements of Appendix R Section III.G.3, i.e., a fixed fire suppression system shall be installed in the area. The exemption was requested for Fire Zone 29 (A, B, E) Unit 1 Essential Service Water Pumps and Motor Control Centers.

Exemption SER - NRC SER dated December 23, 1983

Based on the evaluation the NRC granted the exemption for lack of a fixed fire suppression system within the Unit 1 Essential Service Water Pumps and Motor Control Centers.

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, Unit 2 ESW Pumps and MCCs Lack of Fixed Fire Suppression (Criteria III.G.3) - Exemption 7.6

Basis Date: December 23, 1983

To Be Transitioned?: No

Basis: Exemption approval per the NRC SER dated December 23, 1983 provides the following justification for the lack of fixed fire suppression as required by Section III.G.3 of Appendix R, which was submitted by I&M Letter No. AEP:NRC:0692E dated March 31, 1983.

-3 hour rated fire barriers separate the Unit 1 and Unit 2 equipment.
-Manual fire suppression provided.
-Combustible loading is low.
-Automatic detection system

The original compliance strategy for Fire Area AA33 was in accordance with III.G.3. This area lacked fixed fire suppression therefore an exemption was required. Fire Area AA33 currently complies with Appendix R Section III.G.1 and therefore, no longer credits this exemption for lack of a fixed fire suppression system. The NFPA 805 transition compliance strategy is in accordance with Section 4.2.4.2, a performance based approach that does not credit a fixed suppression system. A fire risk evaluation has been performed for this area. This exemption is not required and will not be transitioned to the NFPA licensing basis since the compliance strategy of Section 4.2.4.2 does not require or credit a fixed suppression system installed within in the area.

Applicable Fire Areas:

Fire Area	Fire Area Description
AA33	Unit 2 Essential Service Water Pump Area (El. 591 ft.)

Licensing Action Documentation:

Initial Exemption Request - I&M Letter No. AEP:NRC:0692E dated March 31, 1983

Per the provisions of 10 CFR 50.48(C)(6) and 10 CFR 50.12, I&M requested an exemption from the specific requirements of Appendix R Section III.G.3, i.e., a fixed fire suppression system shall be installed in the area. This exemption was requested for Fire Zones 29C, 29D and 29F Unit 2 Essential Service Water Pumps and Motor Control Centers.

Exemption SER - NRC SER dated December 23, 1983

Based on the evaluation the NRC granted the exemption for lack of a fixed fire suppression system within the Unit 2 Essential Service Water Pumps and Motor Control Centers.

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, Screenhouse Auxiliary MCC Room Lack of Automatic Suppression (Criteria III.G.2.c) - Exemption 7.7

Basis Date: December 23, 1983

To Be Transitioned?: Yes

Basis:

Exemption approval per the NRC SER dated December 23, 1983 provides the following justification for the lack of automatic suppression as required by Section III.G.2.c of Appendix R, which was submitted by I&M Letter No. AEP:NRC:0692E dated March 31, 1983.

- Ceilings and walls are 3 hour fire rated.
- Arrangement of stairway and exhaust ventilation provide adequate ventilation to preclude the buildup of a hot gas layer where the ESW cables penetrate the fire zone.
- ESW cables have 1 hour fire barriers.
- Combustible loading is low.
- 3 hour fire rated dampers installed in the Unit 2 ESW pump cubicle HVAC supply ducts.

The compliance strategy for Fire Zone 29G is in accordance with III.G.2.c. This area has a lack of automatic suppression therefore an exemption was required. Fire Zones 29A, 29B, 29E have been regrouped with Fire Zone 29G and they now form Fire Area AA32. The NFPA 805 transition compliance strategy for AA32 is in accordance with 4.2.3.3.c, a deterministic approach that credits the use of 1-hour rated ERFBS with automatic detection and automatic suppression. This exemption is required for transition to the NFPA 805 licensing basis because of the lack of automatic suppression within Fire Area AA32.

Applicable Fire Areas:

Fire Area	Fire Area Description
AA32	Unit 1 Essential Service Water Pump Area and Unit 1 and Unit 2 Basement Motor Control Center Room (El. 591 ft. and 575 ft.)

Licensing Action Documentation:

Initial Exemption Request - I&M Letter No. AEP:NRC:0692E dated March 31, 1983

I&M Letter No. AEP:NRC:0692E dated March 31, 1983 states:

"Fire Zone 29G Circulating Water Pump Motor Control Room below Unit 1 and Unit 2 ESW Pump Rooms

EXEMPTION REQUEST

Area Description

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, Screenhouse Auxiliary MCC Room Lack of Automatic Suppression (Criteria III.G.2.c) - Exemption 7.7

Fire Zone 29G is the basement level below the essential service water pumps of both Units 1 and 2 and contains two non-safe shutdown motor control centers. The fire zone has a hatch with a ladder up to the Unit 2 ESW southeast pump cubicle and a stairway to the northwest Unit 1 pump cubicle.

The ceiling and walls are all three-hour rated. Conduit for all four ESW pumps, their valves and strainers, enters the east wall via embedded conduit from the Turbine Room. With the exception of the four ESW pump power cable and a conduit for WMO-701 (the Unit 1 east pump discharge valve), all the conduit comes through the wall in pull boxes at near ceiling height and immediately exits up into the ceiling slab. The cabling into the ceiling runs in embedded conduit to its respective pump cubicle. All ceiling and wall penetrations are sealed with three-hour rated fire seals.

Pertinent room dimensional data is contained in Fire Zone 29G Summary Evaluation Table 7.7-1, and Figure 7.7.1.

Safe Shutdown Equipment

Fire Zone 29G contains no safe shutdown equipment except cables in conduit for the components of both Units 1 and 2 Essential Service Water Systems The cables for the four pump strainers and discharge valves are located in conduit and in pull boxes at ceiling height. The conduits enter the zone from the Turbine Room floor slab and immediately exit through the ceiling slab to respective pump cubicles. Except for one conduit, the zone exit points are all within the pull boxes. One ESW discharge valve (WMO-701) conduit is run from the pull box near the ceiling to the cubicle area for the Unit 1 east pump and exits through the ceiling. The four pump power cables enter the zone through the east wall at about ceiling height (being run into the zone in the floor slab of the Turbine Building) and area routed near the ceiling to the respective jump cubicle area where they exit Fire Zone 29G through the ceiling.

Fire Protection Systems

Fire Zone 29G has no automatic suppression or detection systems installed and is provided with the manual suppression systems available to 29(A, B, E) and 29(C, D, F).

Fire Hazards Analysis

Fire Zone 29G is a common zone for both Unit 1 and. Unit 2. The only safe shutdown equipment in the area is conduit containing cables for the ESW systems of both units. The combustible loading, due entirely to cable insulation, is approximately 4,750,000 Btu which, when distributed over the fire zone surface area, results in approximately 3560 Btu/ft2. The calculated fire severity is approximately three minutes.

The pump power cables are in four inch conduit entering the fire zone through the east wall. The valves and strainers for all four pumps likewise enter the fire zone through the east wall and immediately exit up through the ceiling. No protection presently exists for the conduits of all four pumps. The fire zone provides no path for transient combustibles; however, protection to all cabling associated with both units' ESW systems will be provided. There are no specific sections of the fire zone which contain high densities of combustible materials.

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, Screenhouse Auxiliary MCC Room Lack of Automatic Suppression (Criteria III.G.2.c) - Exemption 7.7

A stairway entering from the Unit 1 west pump cubicle and a ladder in a hatch from Unit 2 east pump cubicle, approximately 40 ft apart, provide a common connection between Units 1 and 2. Hot combustible gases from a fire in Fire Zone 29G could affect the ESW pumps in both units. To protect the unlikely occurrence of all four pumps being affected, a fire-rated hatch cover will be provided in the ladder way to the Unit 2 west cubicle.

Proposed Modifications

The fire hazards analysis performed revealed that Fire Zone 29G is not in compliance with Appendix R and as a result the zone will be upgraded with fire protection modifications.

Fire Detection

The fire zone will be provided with an automatic fire detection system.

Hatch

The hatch exiting the fire zone to the east pump cubicle of Unit 2 will be provided with at least a one-hour-rated fire hatch door to isolate the Unit 2 pump rooms from the Unit 1 pump rooms (via 29G).

Conduits

The following conduits will be provided with one-hour fire protection (grouped in four pull boxes) from the entry to exit point in the fire zone:

Pull Box: 8626G-1, 8627G-1, 8628G-1, 8629G-1

Pull Box: 8624R-1, 8624R-2, 8618R-1, 8619R-1, 8620R-1

Pull Box: 8618R-2, 8619R-2, 8620R-2, 8996R-2

Pull Box: 8977G-1, 9987G-2,8929G-2, 8626G-2

Pump Power and Discharge Valve Conduits

The following pump power and discharge valve conduits will be provided with one-hour protection from the entry to the exit point of the fire zone:

8004R-1 (PP-1W Unit-2)

8004G-2 (PP-2E Unit-2)

8004G-1 (PP-1E Unit-1)

8004R-2 (PP-2W Unit-2)

9232G-1 (WMO-701 Unit-1 East)

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, Screenhouse Auxiliary MCC Room Lack of Automatic Suppression (Criteria III.G.2.c) - Exemption 7.7

Conclusion

Based on the previous analysis, exemption is requested from an automatic suppression system as prescribed in Section III.G.2 of Appendix R. The bases which justify the exemption are summarized as follows:

1. An automatic fire detection system is to be provided for the fire zone.

2. The conduits of both divisions (all four pumps and associated components) are to be provided with one-hour fire protection.

3. The hatch connecting the Unit 2 pump room to the Unit 1 pump room, via Fire Zone 29G, is to be provided with a one-hour-rated hatch cover.

4. The combustible loading of Fire Zone 29G is extremely low with a fire severity of less than five minutes.

5. The fire zone is not in a normal path for transporting transient combustibles.

6. Modifications required to meet Section III.G.2 would not significantly enhance fire protection safety above that provided by present commitments."

Exemption Correspondence - I&M Letter No. AEP:NRC:0692H dated August 22, 1983

In attachment to I&M Letter No. AEP:NRC:0692H dated August 22, 1983 it states:

"SUPPLEMENTAL INFORMATION TO SUPPORT EXEMPTION REQUEST 7.7 FOR FIRE ZONE 29G

This section provides supplemental information concerning the proposed hatch construction and other fire hazards analysis considerations which support the III.G.2 suppression exemption request in the D. C. Cook Appendix R. Report, Section 7.7

An open stairway entering from the Unit 1 West ESW pump cubicle, Fire Zone 29B, and a ladder and a hatch opening from the Unit 2 East ESW pump cubicle, Fire Zone 29C, provide a common connection between the Unit 1 and 2 ESW pumps via Fire Zone 29G. As stated in the D. C. Cook Appendix R. Report, Section 8.11.3, the hatch opening from the Unit 2 East Pump cubicle will be provided with a hinged hatch for emergency egress from Fire Zone 29G which will prevent propagation of fire effects into the pump area. The hatch will be coated with materials to provide an equivalent three-hour fire rating. The hatch will ensure that hot combustible gases resulting from a fire in Fire Zone 29G will not affect the Unit 2 ESW pumps.

The Unit 1 West pump cubicle is provided with 10,000 cfm of ducted supply air. All cabling for the supply fans is embedded in concrete from the MCC in Fire Zone 29E to the fan motors, with none of the cabling existing in Fire Zone 29G. Two supply fans are provided, with only one required as each

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Appendix R Exemption, Screenhouse Auxiliary MCC Room Lack of Automatic Suppression (Criteria III.G.2.c) - Exemption 7.7

provides 100% of the required air flow for the cubicle. Air is exhausted from this cubicle through the screen mesh security gate in the north wall.

Due to the low combustible loading in Fire Zone 29G and these natural exhaust air flow paths out of the Unit 1 West pump cubicle, hot gases or other products of combustion from a fire in Fire Zone 29G which would flow up the stairway will flow directly out of the cubicle and prevent the formation of a stratified layer of hot gases with sufficient depth to damage the Unit 1 ESW pumps.

At the NRC Staff's request, we have reviewed the Fire Hazard Analysis to determine if three-hour raceway barriers for two of the four ESW pump trains would be preferable to one-hour barriers for all four ESW trains. Based on the low in-situ combustible loadings and a lack of major activity in the zone, Indiana and Michigan Electric Company believes that the previously proposed one-hour barriers for all four trains achieves an equivalent or superior level of fire protection for the zone configuration. In addition, the design and installation issues associated with the three-hour raceway barriers suggest that implementation of that alternative is not preferred.

Based on these considerations, both the east and west trains of ESW for both Units 1 and 2 will be protected from the effects of fires in Fire Zone 29G. In the highly unlikely event that a fire in Fire Zone 29G should cause failure of both Unit 1 ESW pumps, alternate shutdown capability for Unit 1 is available through the use of the Unit 2 ESW pumps.

The alternative shutdown capability is described in the D. C. Cook Appendix R. Report, Section 5.2.3.

Manual hose stations are provided in the Screen House for fighting fires in Fire Zone 29G. The hose stations are located such that all portions of Fire Zone 29G can be covered with 75 feet of hose and 30 feet of water stream. Figures 6.1 and 6.2 indicate the locations of manual hose stations and portable extinguishers for fighting fires in Fire Zone 29G.

Based on this supplemental information and the analysis contained within the March 1983 Appendix R submittal for D. C. Cook, the exemption from providing an automatic suppression system in Fire Zone 29F should be granted."

Exemption SER - NRC SER dated December 23, 1983

NRC SER dated December 23, 1983 states:

"Circulating Water Pump Motor Control Room (Fire Zone 29G)

Exemption Requested

An exemption is requested from Section III.G to the extent it requires 3-hour barriers for the boundaries of fire areas, and the installation of automatic suppression in areas where redundant trains of safe shutdown cables are routed.

Discussion

Attachment K - Exsiting Licensing Action Transition

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Appendix R Exemption, Screenhouse Auxiliary MCC Room Lack of Automatic Suppression (Criteria III.G.2.c) - Exemption 7.7

Fire zone 29G is the basement level below the essential service water pump rooms of both units and contains two non-safe shutdown motor control centers. The fire zone has an open hatch with a ladder up to the Unit 2 ESW southeast pump cubicle and a stairway which opens to the northwest Unit 1 pump cubicle.

The ceiling and walls are all three-hour rated. With the exception of the four ESW pump power cables and conduit for the Unit 1 east pump discharge valve, all the conduit comes through the wall in pull boxes near the ceiling and immediately exits up into the ceiling slab. The cabling into the ceiling runs in embedded conduit to its respective pump cubicle. All ceiling and wall penetrations are sealed with three-hour rated fire seals.

The licensee now proposes a different modification involving the open hatchway. Previously, a one-hour rated hatch was proposed. Now a 3-hour rated hatch is proposed. The Unit 1 and Unit 2 ESW pumps will therefore be separated by a complete 3-hour barrier in compliance with Section III.G. In addition, the arrangement of the stairway and exhaust ventilation system provides a means for high-level venting of smoke, heat, and combustion products emanating from the fire zone 29G. This will preclude a buildup of a hot gas layer at the ceiling level in the fire zone 29G where ESW pump cables are located. Additional protection is provided by one-hour rated fire barriers on all four trains of ESW pump cables. We agree that the proposed modifications in conjunction with the low fuel load-in the area provides reasonable assurance that one train of ESW pumps will be maintained free of fire damage.

Conclusion

Based on the above evaluation, the level of protection provided for the ESW pumps (Fire Zone 29G) provide a level of fire protection equivalent to the technical requirements of Section III.G. The exemption should be granted."

Additional SER: NRC SER dated June 17, 1988

NRC SER dated June 17, 1988 states:

"ESSENTIAL SERVICE WATER PUMP HOUSE

DEVIATION REQUESTED

A deviation was requested from Section D.1.j of Appendix A to BTP APCSB 9.5-1 to the extent that floors, walls and ceilings enclosing separate fire areas should have minimum fire ratings of three hours. Specifically, the licensee has identified an unrated steel hatch, an undampered ventilation duct and screen mesh access gates in fire area boundaries surrounding Essential Service Water Pumps and Circulating Water Pump Motor Control Room.

DISCUSSION

Fire Zones 29A and 29B are the Unit 1 Essential Service Water (ESW) Pump Cubicles while Zones 29C and 29D house the Unit 2 ESW Pumps. The Circulating Water Pump Motor Control Room, Zone

Licensing Action

Appendix R Exemption, Screenhouse Auxiliary MCC Room Lack of Automatic Suppression (Criteria III.G.2.c) - Exemption 7.7

29G, is located directly below all four pump cubicles. Zones 29A and 29B are separated from Zones 29C and 29D by a 3-hour rated barrier. Undampered HVAC supply air openings exist in the ceiling of each of the ESW Pump Cubicles, although, by letter dated May 30, 1987, the licensee committed to install 3-hour rated dampers in the Unit 2 cubicle air openings. Unsealed piping penetrations are present in the Unit 1 cubicles while the piping penetrations in the Unit 2 ceiling area sealed. Access to Zone 29G is provided from an open curbed stairway from Zone 29B. Access to Zone 29C is provided by an unrated steel hatch in the ceiling of Zone 29G. Access to the screen house area from the pump rooms is provided through steel mesh gates.

The Unit 1 ESW Pumps provide alternate shutdown capabilities for Unit 2 and the Unit 2 pumps provide alternate shutdown capability to Unit 1. Zone 29G contains ESW Pump power cables for both Units, however, the cables are in conduits which are protected with 1-hour rated material.

Early warning fire detection has been installed in the Unit 1 and Unit 2 pump cubicles and Zone 29G. The early warning detection alarms in the control room. Fire suppression consists of extinguishers and manual hose stations provided throughout the zones. By letter dated June 14, 1983, an exemption from Section III.G of Appendix R to 10 CFR 50 was granted for Zones 28A, B, C and D to the extent that a fixed suppression system is not provided in an area where alternate shutdown is provided.

The combustible loading for the ESW Pump Cubicles, Fire Zones 29A, B, C and D is approximately 7,000 Btu/ft(2) each. The loading for Zone 29G is less than 13,000 Btu/ft(2). These loadings correspond to an equivalent fire severity per ASTM E119 of less than 10 minutes.

EVALUATION

The fire boundaries of the ESW Pump Cubicles and Circulating Water Pump Motor Control Room deviate from the requirements of Section D.1.j of Appendix A to BTP APCSB 9.5-1 to the extent that they contain openings and an unrated hatch thereby making the fire area boundaries not 3-hour rated. The concern is that a fire could propagate from one of the pump cubicles in one unit to the pump cubicles of the other unit and affect the ability of the plant to safely shut down.

However, the combustible loading in all of the areas of concern is low with an equivalent fire severity of under 10 minutes for each zone. The one zone which would have been a concern was the roof area which is used for the storage of wood and other combustibles. This would have allowed for the possibility for a fire to spread up through one of the air openings and then across and down through other openings in the other unit's pump cubicles. However, the licensee has committed to provide 3-hour rated dampers in the Unit 2 openings which would prevent this scenario from occurring. Another concern would be the possibility that a fire in either Zone 29B, 29G or 29C could propagate to the other two zones via the stairway and the unrated steel hatch. Since the combustible loading in each of the three areas is low, it is not probable that a single fire could travel the stairway in either direction and also cause the steel hatch to fail and spread to the zone on the opposite side. Flammable liquids would be prevented from traveling down the stairway due to a six inch curb at the top. For a fire to affect pumps from both units through the mesh access gates, it would have to travel 175 feet through an area with a combustible loading of under 10 minutes. The lack of combustibles provides reasonable assurance that this scenario is not probable. If a fire were to occur in any of the zones of concern, it would be expected that the early warning detection would alert Control Room personnel

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Appendix R Exemption, Screenhouse Auxiliary MCC Room Lack of Automatic Suppression (Criteria III.G.2.c) - Exemption 7.7

who in turn would notify the fire brigade. Due to the low combustible loading, it would also be expected that the brigade could control the fire prior to it spreading out of the zone of origin. Therefore, there is reasonable assurance that the lack of complete 3-hour boundaries of the Essential Service Water Pump Cubicles and the Circulating Water Pump Motor Control Room does not adversely affect plant fire safety or the ability of the plant to safely shutdown.

CONCLUSION

Based on the above evaluation, it is concluded that the existing fire protection features of the ESW Pump Cubicles and the Motor Control Room, combined with the licensee's commitment to install 3-hour dampers, provide an acceptable level of protection in accordance with the guidelines of Sectio D.1.j of Appendix A to BTP APCSB 9.5-1. Therefore, the deviation for the unrated hatch, undampered air openings and screen mesh access gates is acceptable."

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, Unit 1 East Main Steam Valve Enclosure and Contractor Access Control Building Lack of Fixed Fire Suppression (Criteria III.G.3) - Exemption 7.8

Basis Date: December 23, 1983

To Be Transitioned?: No

Basis: Exemption approval per the NRC SER dated December 23, 1983 provides the following justification for the lack of fixed fire suppression as required by Section III.G.3 of Appendix R, which was submitted by I&M Letter No. AEP:NRC:0692E dated March 31, 1983.

-Barriers have a minimum of a 1 hour rating.
-Combustible loading is low.
-Alternate shutdown capability is provided independent of the area.
-Automatic detection
-1 hour rated fire dampers.
-Cable insulation is distributed throughout the area and in its present condition does not pose a significant hazard.

The compliance strategy for Fire Area AA34 is in accordance with III.G.3. This area has a lack of fixed fire suppression therefore an exemption was required. The NFPA 805 transition compliance strategy is in accordance with Section 4.2.4.2, a performance based approach with fire modeling that does not credit suppression. This exemption is no longer required and will not be transitioned to the NFPA licensing basis since the compliance strategy of Section 4.2.4.2 does not require or credit a fixed suppression system installed within in the area.

Applicable Fire Areas:

Fire Area	Fire Area Description
AA34	Unit 1 East Main Steam Valve Enclosure, Main Steam Line Non-Essential Service Water Valve Areas & Contractor Access Control Area (EL. 612 ft.)

Licensing Action Documentation:

Initial Exemption Request - I&M Letter No. AEP:NRC:0692E dated March 31, 1983

Per the provisions of 10 CFR 50.48(c)(6) and 10 CFR 50.12, I&M requests exemptions from the specific requirements of Appendix R, Section III.G.3, i.e., a fixed fire suppression system in the fire area. This exemption was requested for Fire Zones 33, 33A, 33B the Unit 1 East Main Steam Enclosure.

Exemption SER - NRC SER dated December 23, 1983

Based on the evaluation the NRC granted the exemption for lack of a fixed fire suppression system within the Unit 1 East Main Steam Enclosure.

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, Unit 2 East Main Steam Valve Enclosure Lack of Fixed Fire Suppression (Criteria III.G.3) - Exemption 7.9

Basis Date: December 23, 1983

To Be Transitioned?: No

Basis: Exemption approval per the NRC SER dated December 23, 1983 provides the following justification for the lack of fixed fire suppression as required by Section III.G.3 of Appendix R, which was submitted by I&M Letter No. AEP:NRC:0692E dated March 31, 1983.

-Barriers have a minimum of a 1 hour rating.
-Combustible loading is low.
-Alternate shutdown capability is provided independent of the area.
-Automatic detection
-1 hour rated fire dampers.
-Cable insulation is distributed throughout the area and in its present condition does not pose a significant hazard.

The original compliance strategy for Fire Area AA35 was in accordance with III.G.3 for Fire Zones 34, 34A, and 34B. This area has a lack of fixed fire suppression therefore an exemption was required. The NFPA 805 transition compliance strategy is in accordance with Section 4.2.3.2, a deterministic approach that relies on 3 hour barriers to separate redundant trains. This exemption is not required and will not be transitioned to the NFPA licensing basis since Section 4.2.3.2 does not require a fixed suppression system installed within in the area.

Applicable Fire Areas:

Fire Area	Fire Area Description
AA35	Unit 2 East Main Steam Valve Enclosure, Main Steam Line Non-Essential Service Water Valve Areas (EL. 612 ft.)

Licensing Action Documentation:

Initial Exemption Request - I&M Letter No. AEP:NRC:0692E dated March 31, 1983

Per the provisions of 10 CFR 50.48(c)(6) and 10 CFR 50.12, I&M requested an exemption from the specific requirements of Appendix R, Section III.G.3, i.e., a fixed fire suppression system in the fire area. This exemption was requested for Fire Zones 34, 34A and 34B the Unit 2 East Main Steam Enclosure.

Exemption SER - NRC SER dated December 23, 1983

Based on the evaluation the NRC granted the exemption for lack of a fixed fire suppression system within the Unit 2 East Main Steam Enclosure.

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, Auxiliary Building South Lack of 1-Hour Fire Barrier (Criteria III.G.2.c) - Exemption 7.10

Basis Date: December 23, 1983

To Be Transitioned?: No

Basis:

Exemption approval per the NRC SER dated December 23, 1983 provides the following justification for the lack of a 1-hour fire barrier as required by Section III.G.2.c of Appendix R, which was submitted by I&M Letter No. AEP:NRC:0692E dated March 31, 1983.

-The CCW pumps are surrounded by 6 inch high curbs.
-Suppression system covers the CCW pumps.
-Automatic detection provided above the CCW pumps.
-3 hour rated partial height barrier to be provided to separate redundant CCW pumps.

The original compliance strategy for Fire Area AA36/42 was in accordance with III.G.2.c. This area has a lack of a 1 hour rated barrier installed on redundant cables within the area therefore an exemption was required. The NFPA 805 transition compliance strategy is in accordance with Section 4.2.4.2, a performance based approach. A fire risk evaluation has been performed for this area. This exemption is no longer required and will not be transitioned to the NFPA licensing basis since the compliance strategy of Section 4.2.4.2 does not require 1 hour rated barriers installed on redundant cables within the same fire area.

Applicable Fire Areas:

Fire Area	Fire Area Description
AA36/42	Auxiliary Building (El. 609 ft.)

Licensing Action Documentation:

Initial Exemption Request - I&M Letter No. AEP:NRC:0692E dated March 31, 1983

Per the provisions of 10 CFR 50.48(c)(6) and 10 CER 50.12, I&M requested an exemption from Appendix R Section III.G.2, i.e., enclosure of cable and equipment and associated non-safety circuits of one redundant train in a fire barrier having a 1-hour rating. This exemption was requested for Fire Zone 44S the Component Cooling Water Pump Area at the South End of the Auxiliary Building, El. 609 ft.

Exemption SER - NRC SER dated December 23, 1983

Based on the evaluation the NRC granted the exemption for lack of a 1-hour rated barrier enclosing cable and equipment of a redundant train within the Component Cooling Water Pump Area.

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, Unit 1 Main Control Room and Unit 2 Hot Shutdown Panel Enclosure Lack of Fixed Fire Suppression (Criteria III.G.3) - Exemption 7.11

Basis Date: December 23, 1983

To Be Transitioned?: No

Basis:

Exemption approval per the NRC SER dated December 23, 1983 provides the following justification for the lack of fixed fire suppression as required by Section III.G.3 of Appendix R, which was submitted by I&M Letter No. AEP:NRC:0692E dated March 31, 1983.

-3 hour rated floors, ceilings and walls with exception of the 2 hatches in the ceiling.
-3 hour rated door between unit 1 and unit 2.
-Two 3 hour rated floor hatches.
-Automatic Detection
-CO2 fire extinguishers located within the fire zone.
-CO2 hose reels located outside the fire zone.
-Two 1 hour breathing apparatus located within the fire zone.
-Alternate shutdown capability is provided independent of the area.
-Combustible loading is low.

The compliance strategy for Fire Area AA46, the Unit 1 Control Room is in accordance with III.G.3. This area has a lack of fixed fire suppression therefore an exemption was required. The NFPA 805 transition compliance strategy is in accordance with Section 4.2.4.2, a performance based approach that does not credit a fixed suppression system. Note: The Unit 2 Hot Shutdown Panel is no longer considered within the Unit 1 Control Room fire area. A fire risk evaluation has been performed for this area. This exemption is no longer required and will not be transitioned to the NFPA licensing basis since Section 4.2.4.2 does not require or credit a fixed suppression system.

Applicable Fire Areas:

Fire Area	Fire Area Description
AA51	Unit 2 Control Room Cable Vault and Hot Shutdown Panel Area (El 624 ft. and 633 ft.)
AA46	Unit 1 Control Room (El. 633 ft.)

Licensing Action Documentation:

Initial Exemption Request - I&M Letter No. AEP:NRC:0692E dated March 31, 1983

Per the provisions of 10CFR 50.48(c)(6) and 10 CFR 50.12, I&M requested an exemption from the specific requirements of Appendix R Section III.G.3,i.e., a fixed fire suppression system shall be installed in the area. This exemption was requested for Fire Zone 53 the Unit 1 Control Room.

Exemption SER - NRC SER dated December 23, 1983

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, Unit 1 Main Control Room and Unit 2 Hot Shutdown Panel Enclosure Lack of Fixed Fire Suppression (Criteria III.G.3) - Exemption 7.11

Based on the evaluation the NRC granted the exemption for lack of a fixed fire suppression system within the Unit 1 Control Room.

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, Unit 2 Main Control Room and Unit 1 Hot Shutdown Panel Enclosure Lack of Fixed Fire Suppression (Criteria III.G.3) - Exemption 7.12

Basis Date: December 23, 1983

To Be Transitioned?: No

Basis:

Exemption approval per the NRC SER dated Decmeber 23, 1983 provides the following justification for the lack of fixed fire suppression as required by Section III.G.3 of Appendix R, which was submitted by I&M Letter No. AEP:NRC:0692E dated March 31, 1983.

-3 hour rated floors, ceilings and walls with exception of the 2 hatches in the ceiling.
-3 hour rated door between unit 1 and unit 2.
-Two 3 hour rated floor hatches.
-Automatic Detection
-CO2 fire extinguishers located within the fire zone.
-CO2 hose reels located outside the fire zone.
-Two 1 hour breathing apparatus located within the fire zone.
-Alternate shutdown capability is provided independent of the area.
-Combustible loading is low.

The compliance strategy for Fire Area AA47, the U2 Control Room is in accordance with III.G.3. This area has a lack of fixed fire suppression therefore an exemption was required. The NFPA 805 transition compliance strategy is in accordance with Section 4.2.4.2, a performance based approach that does not credit a fixed suppression system. Note: The Unit 1 Hot Shutdown Panel is no longer considered within the Unit 2 Control Room fire area. A fire risk evaluation has been performed for this area. This exemption is no longer required and will not be transitioned to the NFPA licensing basis since the compliance strategy of Section 4.2.4.2 does not require or credit a fixed suppression system installed for the applicable fire zones analyzed within this exemption.

Applicable Fire Areas:

Fire Area	Fire Area Description
AA50	Unit 1 Control Room Cable Vault and Hot Shutdown Panel Area (El. 624 ft. and 633 ft.)
AA47	Unit 2 Control Room (El. 633 ft.)

Licensing Action Documentation:

Initial Exemption Request - I&M Letter No. AEP:NRC:0692E dated March 31, 1983

Per the provisions of 10CFR50.48(c)(6) and 10 CFR 50.12, I&M requested an exemption from the specific requirements of Appendix R Section III.G.3, i.e., a fixed fire suppression system shall be installed in the area. This exemption was requested for Fire Zone 54 the Unit 2 Control Room.

Exemption SER - NRC SER dated December 23, 1983

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, Unit 2 Main Control Room and Unit 1 Hot Shutdown Panel Enclosure Lack of Fixed Fire Suppression (Criteria III.G.3) - Exemption 7.12

Based on the evaluation the NRC granted the exemption for lack of a fixed fire suppression system within the Unit 2 Control Room.

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, RCP Lube Oil Collection System (Criteria III.O) - Exemption 7.15

Basis Date: December 23, 1983

To Be Transitioned?: Yes

Basis: Exemption approval per the NRC SER dated December 23, 1983 provides the following justification for RCP lube oil collection system as required by Section III.O of Appendix R, which was submitted by I&M Letter No. AEP:NRC:0692D dated December 30, 1982.

- No ignition sources at the floor level of the lower containment.
- Oil system is capable of withstanding a safe shutdown earthquake.
- Tank has the capacity to hold the total lube oil inventory for one pump.

Section III.O of Appendix R requires that the oil collection system be large enough to handle the largest potential oil leak without overflowing. The oil collection tanks have a capacity to collect the oil from 1 RCP therefore an exemption was required. This requirement is applicable to section 3.3.12.5 of NFPA 805. This exemption will be transitioned to the NFPA licensing basis.

Applicable Fire Areas:

Fire Area	Fire Area Description
AA58	Unit 2 Containment
AA56	Unit 1 Containment

Licensing Action Documentation:

Initial Exemption Request - I&M Letter No. AEP:NRC:0692D dated December 30, 1982

I&M Letter No. AEP:NRC:0692D dated December 30, 1982 stated:

"In our July 19, 1982 letter (AEP:NRC:0692C), we committed to re-evaluate the seismic characteristics of the existing oil drainage piping and collection tank installed in Units 1 and 2 of the Cook Plant and also to undertake an evaluation of the seismic capability of the RCP motor lube oil system. In the former evaluation, we committed to inspect the oil drainage piping during the next refueling outages of each unit and to undertake modifications to the oil drainage system as necessary. Both-the-re-evaluation of the seismic characteristics of the oil drainage piping and collection tank and the evaluation of the seismic capability of the motor lube oil system have been completed. Based on the results of these evaluations and with the exception of the exemptions we are requesting, we have concluded that the oil collection system installed at the Cook Plant meets the requirements of Section III.O of Appendix R. A general summary of the results of our evaluations, the subsequent modifications we have taken on Unit 1 and are currently taking on Unit 2, and the areas where we are requesting exemptions from the specific requirements of Section III.O of Appendix R is presented below.

Based on our evaluation of the oil drainage piping and collection tank, utilizing inputs from EDS Nuclear with respect to the seismic capability of the oil collection tank and inputs from Stevenson & Associates with respect to the oil drainage piping, it was decided that certain modifications were desirable to insure the adequacy of the system. The modifications included the addition of pipe

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, RCP Lube Oil Collection System (Criteria III.O) - Exemption 7.15

supports (generally in the area of the RCPs), reinforcement of the lube oil collection tank, removal of the sight glass on the tank, sealing of the oil lift enclosures, and seal welding or socket welding of threaded piping connections.

The above modifications were incorporated into Unit 1 during the recent refueling outage (July—September, 1982). These same modifications, excluding seal welding, are being incorporated into Unit 2 during its current refueling outage. Consultation with Stevenson & Associates since the Unit 1 outage indicated that threaded connections which are not subject to vibration are seismically acceptable provided that the joint efficiency is reduced by a predetermined factor. The analysis was performed incorporating this criterion and the threaded joints were determined to be adequate. In addition, the threaded joints subject to vibration from the RCPs are being seal welded or replaced with socket welds.

To insure continued integrity of these systems, they will be inspected during each refueling outage in accordance with Plant Procedure 12 MHP 5030.001.003 ("Maintenance Procedure for Inspection of Reactor Coolant Pump Motor Oil Levels and Oil Spill Protection Integrity").

The oil collection system installed at the Cook Plant preceded the issuance of the Appendix R requirements. As such, there are aspects of our design which do not meet the specific requirements of Appendix R but which we believe will not prevent the system from fulfilling its intended safety function. Specifically:

A. The presently installed system incorporates an oil collection tank sized to hold the inventory of only one RCP motor. It is our contention that such a system is adequate based on the following:

1. A credible event which could cause simultaneous failure of two- or more RCP motor lube oil systems is a seismic event. The results of our analysis indicate that the components of the RCP motor lube oil system are capable of withstanding a safe shutdown earthquake (SSE). In addition, Westinghouse's analysis of the RCP lube oil system has confirmed that the RCP motor was conservatively designed and the stresses under design basis earthquake (DBE) conditions are well within the allowable stresses giving reasonable assurance that the RCP motor oil system (lift pump, oil coolers, etc.) can withstand a DBE and maintain its integrity.

2. Should a failure of more than one RCP motor lube oil system occur, the oil collection tank would overflow to the lower containment floor. The system uses a synthetic oil (Mobil SHC 824) which has a flash point of 480 F and an ignition temperature of about 700 F. There is no source of heat at the floor of the lower containment capable of igniting the oil.

B. Portions of the lube oil collection system are not designed to withstand a design basis accident (LOCA and Steamline Break) however, it is our contention that the system is adequate based on the following:

1. During normal operation, the lube oil collection system will function to collect drips and drains and route these to the oil collection tank. In addition, the RCP motor areas are protected by a fire sprinkler system.

2. As described previously, the lube oil collection system is adequate to perform its function during and after a SSE.

Licensing Action

Appendix R Exemption, RCP Lube Oil Collection System (Criteria III.O) - Exemption 7.15

3. In the unlikely event of a design basis accident, some portions of the lube oil collection piping may be susceptible to failure. However, such failure would not result in a fire hazard because of the characteristics of the synthetic oil and the operation of the containment spray system, a safety grade system, acting as an effective fire suppression system.

Although the lube oil collection system, as described above, does not meet all the requirements of 10 CFR 50 Appendix R, Section III.O, we believe that the containment area is adequately protected from a fire which may initiate from a RCP lube oil collection system failure. We therefore request that, pursuant to the provisions of 10 CFR 50.48(c)(6), an exemption from the requirements of Section III.O of Appendix R to 10 CFR 50 be granted to us, such that it be acknowledged that the oil collection system for the RCPs installed at the Cook Plant and modified as described in this Attachment is adequate and sufficient to meet its intended safety function."

Exemption SER - NRC SER dated December 23, 1983

NRC SER dated December 23 1983 stated:

"Oil Collection System for Reactor Coolant Pumps

Exemption Requested

An exemption is requested from Section III.0 to the extent it requires an oil collection tank sized to hold the lube oil inventory of all four-RCP motors.

Discussion

Each unit has four reactor coolant pumps with an oil collection system which drains to a vented closed collection tank. The quantity of lubricating oil in each pump is 265 gallons. The capacity of the oil collection tank is 275 gallons. The components have been designed so that they are capable of withstanding a safe shutdown earthquake (SSE).

The collection tank is arranged such that if a failure of more than one RCP motor lube system occurred, the oil collection tank would overflow onto the lower containment floor. The lubricating oil used in the RCP motors has a flash point of approximately 480 degrees F. There are no ignition sources at the floor level of the lower containment.

Evaluation

The RCP motor lube oil system does not comply with Section III.D because the oil collection tank is not sized to contain the entire lube oil system inventory.

The RCP motor lube oil system is capable of withstanding the safe shutdown earthquake. The oil collection tank is provided with sufficient capacity to hold the total lube oil inventory of one reactor coolant pump with margin and is designed so that any overflow will be drained to a safe location. We agree with the licensee that the combination of features is acceptable.

Conclusion

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, RCP Lube Oil Collection System (Criteria III.O) - Exemption 7.15

Based on the above evaluation, the existing RCP motor lube oil collection system provides a level of safety equivalent to the technical requirements of Section III.O and, therefore, the exemption should be granted.

Additional Exemption SER - NRC SER dated January 19, 2001

NRC SER dated January 19, 2001 states

"INTRODUCTION

By letter dated February 29, 2000, Indiana Michigan Power Company (I&M) provided corrected information related to a previous exemption from a 10 CFR Part 50, Appendix R, Section III.0 requirement dealing with the reactor coolant pumps (RCPs) motor lube oil collection system. Incorrect data regarding flash point for the RCPs oil was provided by the licensee in the exemption request dated May 4, 1982, as supplemented December 30, 1982. The RCP oil flash point was used in the exemption request to help justify the smaller tank size by showing that oil spill on the piping insulation or overflow on the containment floor would not present a fire hazard. In addition, no ignition sources were reported in proximity to the RCP lube oil tanks and no potential oil leakage sites were detected in the RCP oil collection system. The staff approved the requested exemption with the incorrect flash point (480 F) for the RCP oil by letter dated December 23, 1983.

A telephone conversation was held on July 26, 2000, between members of I&M and the Nuclear Regulatory Commission (NRC) staff related to February 29, 2000, submittal to discuss the information provided by the licensee. At the close of the phone call, the NRC staff indicated that additional information would be required to complete the evaluation of the I&M February 29, 2000, submittal. Additional information was requested by the staff regarding the description of electrical ignition sources present, and where the oil collection tank overflows in the containment. I&M responded to the NRC request for additional information (RAI) by letter dated October 6, 2000, which provided the information requested by the staff.

DISCUSSION

Cook Nuclear Plant (CNP), Units 1 and 2, are each 4-loop Westinghouse Nuclear Steam Supply Systems (NSSS). Each reactor is equipped with four RCPs with an oil collection system which drains to a vented closed collection tank. The quantity of lubricating oil in each pump is approximately 265 gallons and the capacity of the oil collection tank is approximately 257 gallons. The collection tank is arranged such that if a failure of more than one RCP motor lubricating oil system occurred, the oil collection tank would overflow onto the lower containment floor in the containment building. The normal operating temperature of RCP lube oil is 140 F, and a bearing temperature alarm is set at 185 F to indicate when the oil exceeds the normal operating temperature. I&M has determined that the flash point for the RCP lube oil is approximately 425 F. This value is 55 F lower than the previously stated value (480 F). The licensee stated that should the lube oil come in contact with the surface of the hottest insulation in the proximity of the RCP motors it will not result in the ignition of the lube oil. The maximum design outside surface temperature for the mirror insulation is approximately 140 F. Only noncombustible, non-oil absorbent, metal-jacketed mirror insulation is used in the potential oil spill area.

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, RCP Lube Oil Collection System (Criteria III.O) - Exemption 7.15

Additionally, potential electrical ignition sources were identified by the licensee in the area of the oil collection tank system which were not described in the original exemption. Potential electrical ignition sources include: energized 480 volts ac (vac) welding transformer and associated welding outlets, open power take-off box, energized temporary extension cords, and improperly sealed junction boxes at the RCP lube oil collection tank level. The licensee has implemented plant administrative procedures and inspections under corrective maintenance program to control these ignition sources. The operating and surveillance procedures that administratively control these electrical circuits have been revised to ensure that these potential electrical ignition sources are de-energized whenever an RCP is running.

EVALUATION

The RCP oil collection system is required to prevent a major lube oil fire from occurring inside of the reactor containment building, as a result of a lube oil leak from the RCPs. CNP Unit 1 and 2 collects lube oil leakage from each of the four RCP motors into a single collection tank for each unit. The oil collection tank is sized to collect approximately 265 gallons of lube oil the amount contained in one RCP motor, without overflowing. In the event of a single RCP lube oil leak occurring under normal operating conditions, the oil collection system will function to contain the oil and drain it to the oil retention tank. The oil collection system will prevent the lube oil from making contact with hot RCP piping and other external ignition sources. The combined loss of lube oil from all four RCPs motors failing simultaneously would be an overflow of approximately 785 gallons. Any overflow oil would be discharged out of the RCP lube oil collecting tank vent piping tee, located approximately 6.5 feet above the lower containment floor. This oil would flow onto the tank exterior, then onto the lower containment flooring around the tank. There are no floor drains in the RCP lube oil collecting tank area. The lower containment floor does not have a significant slope in any direction, and there is no berm surrounding the RCP lube oil collection tank. There are no physical barriers to prevent overflowing oil from migrating toward the lower containment sump and containment recirculation sump. These two sumps are located in the lower containment, approximately 180 from the RCP oil collection tank. Oil reaching the sump area would flow directly from the lower containment floor evaluation into the lower containment sump.

The identified combustible materials in the area around RCP lube oil collection tank include cable insulation and lube oil. Both the migrating and pooling of oil from an overflow of the RCP lube oil collecting tank should not represent a fire hazard in the area. Also, the oil collecting sumps in the lower containment present no fire hazard to safe shutdown equipment. The temperature in the area is expected to remain below the auto ignition temperature of the lube oil. In addition, the licensee has implemented operating and surveillance procedures in order to control potential electrical ignition sources such that these ignition sources are de-energized whenever a RCP is running. The CNP has administrative controls to ensure that there are no ignition sources in the lower containment when RCPs are required to be operable. An automatic fire detection system and manual fire suppression system are available in the vicinity of the lube oil collecting system to control a postulated fire. In the event of a fire, it is expected that the detector will alarm in the main control room (MCR). The alarm will alert the MCR operators of a fire condition, allowing fire brigade personnel to be dispatched to the fire zone to extinguish the fire. This provides further assurance that a worst-case postulated fire would not damage safe shutdown equipment.

CONCLUSION

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, RCP Lube Oil Collection System (Criteria III.O) - Exemption 7.15

Based on the above evaluation, the staff finds that the change in the flash point of the RCP lubrication oil flash point does not alter the conclusions reached by the staff in granting the original exemption from Section III.O of Appendix R to 10 CFR Part 50. Therefore, the exemption granted by the NRC remains valid."

Attachment K - Exsiting Licensing Action Transition

Licensing Action

Appendix R Exemption, Lack of 8 Hour DC Power for Emergency Lighting (Criteria III.J) - Exemption 7.16

Basis Date: May 26, 1987

To Be Transitioned?: No

Basis:

Exemption approval per the NRC SER dated May 26, 1987 provides the following justification for the lack of 8 hour DC power for the emergency lighting system as required by Section III.J of Appendix R, which was submitted by I&M Letter No. AEP:NRC:0692AY dated March 6, 1987.

-Emergency power supply to the yard lighting is provided by the security diesel generator.
-The normal and emergency power supply are located outside the plant and will not be affected by a safe shutdown fire.
-The security diesel generator is tested monthly and receives biannual preventive maintenance.

The emergency lighting within the Yard is required to be powered from a back up DC 8 hour power supply for safe shutdown manual actions per Section III.J of Appendix R. There is no requirement for 8 hour DC backed lighting under NFPA 805, therefore this exemption is not required to transition to NFPA 805 licensing basis.

Applicable Fire Areas:

Fire Area	Fire Area Description
YD	Yard

Licensing Action Documentation:

Initial Exemption Request - I&M Letter No. AEP:NRC:0692AY dated March 6, 1987

I&M requested an exemption from the specific requirements of Appendix R Section III.J, i.e., emergency lighting with 8 hour battery power. This exemption was requested for the lighting adjacent to the nitrogen regulator relief valves in the yard.

Exemption SER - NRC SER dated May 26, 1987

Based on the evaluation the NRC granted the exemption for lack of a 8 hour battery power lighting in the yard.

L. NFPA 805 Chapter 3 Requirements for Approval (10 CFR 50.48(c)(2)(vii))

3 Pages

Approval Request 1

NFPA 805 Section 3.5.16

NFPA 805 Section 3.5.16 states:

"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."

NFPA 24 - 1987 Section 5-7 states:

"Domestic Service Use Prohibited. The use of hydrants and hose for purposes other than fire-related services shall be prohibited."

Contrary to the requirements of NFPA 805 Section 3.5.16, and NFPA 24 Section 5-7, the fire protection water supply system at CNP may periodically be utilized to supply water for non-fire protection purposes under the following conditions:

- The non-fire protection use of the CNP fire protection water system requires prior approval from the CNP Fire Protection Staff. This process ensures that the fire water system will not be impaired and may be restored to full capacity during a fire scenario.
- Personnel utilizing fire protection water for non-fire protection purposes are in contact with the Control Room, therefore ensuring the ability to secure the full fire water system capacity should a fire occur.

Basis for Request:

The use of the fire protection water for non-fire protection system water demands would have no adverse impact on the ability of the fire protection system to provide required flow and pressure based on the following facts:

- Controls in place to cease the non-fire protection use should a fire condition occur.
- The fire water system at CNP consists of one 2,500 gpm electric motor driven fire pump and two redundant 2,500 gpm diesel engine driven fire pumps connected by a common header to two 685,000 gallon (nominal capacity) fire protection water storage tanks. All fire pumps are electrically independent to ensure that failure of any pump will not impair the reliability of the water-based suppression systems. One 50 gpm electric motor driven pegging pump is provided to maintain fire water system pressure under normal conditions. The system is designed to provide water in excess of that required to suppress a fire.
- There is significant margin in the CNP fire water system above that required for fire suppression demands. There are three redundant 2,500 gpm pumps, providing up to 7,500 gpm, if required. The largest design demand of any sprinkler or fixed water spray system in the power block is the Unit 2 Transformer Sprinkler System which requires less than 3,200 gpm. Considering a 500 gpm fire hose allowance results in a total maximum fire protection flow demand of less than 3,700 gpm. During a design basis fire

scenario, a safety margin of approximately 1,300 gpm is maintained even with only two of the three pumps in operation.

Therefore, it is reasonable to expect that the maximum hydraulic demand for an automatic suppression system (plus allowance for 500 gpm for manual hose stream) will be available in the unlikely event that a delay in ceasing non-fire protection system operations was to occur. Due to communications between Control Room and personnel utilizing fire protection water for non-fire protection purposes, it is reasonable to expect that non-fire protection system functions will be stopped at fire initiation, or very shortly thereafter, and prior to application of fire brigade manual hose streams.

Acceptance Criteria Evaluation:

Nuclear Safety and Radiological Release Performance Criteria:

The CNP fire water system has excess capacity to supply the combined demands of automatic and manual water-based fire suppression systems and non-fire protection uses in the event of a fire. Therefore there is no impact on the nuclear safety performance criteria.

The use of the CNP fire water system for non-fire protection uses has no impact on the radiological release performance criteria.

Safety Margin and Defense-in-Depth:

The CNP fire water system has excess capacity to supply the combined demands of the automatic and manual water-based fire suppression systems and non-fire protection uses in the event of a fire. Therefore, the safety margin inherent in the analysis for the fire event has been preserved.

The use of the CNP fire water system for non-fire protection uses does not impact fire protection defense-in-depth. The fire water system pumps have excess capacity to supply demands of automatic and manual water-based fire suppression systems and non-fire protection uses in the event of a fire.

Conclusion:

NRC approval is requested for the use of the CNP fire water system for purposes other than fire protection water supply with the following restrictions:

- Approval from the CNP Fire Protection Staff is obtained.
- Controls/communications are in place to ensure the non-fire protection system water demand can be secured immediately if a fire occurs.

The engineering analysis performed determined that the performance-based approach utilized to evaluate a variance from the requirements of NFPA 805 Chapter 3:

(A) Satisfies the performance goals, performance objectives, and performance criteria specified in NFPA 805 related to nuclear safety and radiological release;

(B) Maintains safety margins; and

(C) Maintains fire protection defense-in-depth (fire prevention, fire detection, fire suppression, mitigation, and post-fire safe shutdown capability).

M. License Condition Changes

4 Pages

I&M proposes to replace the current CNP fire protection license conditions 2.C.(4) for Unit 1 and 2.C.(3)(o) for Unit 2 with the standard license condition in Regulatory Position C.3.1 of Regulatory Guide 1.205, Revision 1, as shown below. In support of this change, I&M has developed a Fire PRA which has been reviewed and been found acceptable by a Fire PRA WOG peer review conducted during October 12-16, 2009. Outstanding high level findings from the peer review are included in Attachment V of this TR. Any future changes to the Fire PRA will be subject to peer review in accordance with the guidance provided in NEI 07-12 and applicable ASME/ANS PRA standards.

Indiana Michigan Power shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the licensee amendment request dated __________ (and supplements dated___________) and as approved in the Safety Evaluation Report dated ___________ (and supplements dated ____________). Except where NRC approval for changes or deviations is required by 10 CFR 50.48(c), and provided no other regulation, technical specification, license condition or requirement would require prior NRC approval, the licensee may make changes to the fire protection program without prior approval of the Commission if those changes satisfy the provisions set forth in 10 CFR 50.48(a) and 10 CFR 50.48(c), the change does not require a change to a technical specification or a license condition, and the criteria listed below are satisfied.

<u>Risk-Informed Changes that May Be Made Without Prior NRC Approval</u>

A risk assessment of the change must demonstrate that the acceptance criteria below are met. The risk assessment approach, methods, and data shall be acceptable to the NRC and shall be appropriate for the nature and scope of the change being evaluated; be based on the as-built, as-operated, and maintained plant; and reflect the operating experience at the plant. Acceptable methods to assess the risk of the change may include methods that have been used in the peer-reviewed fire PRA model, methods that have been approved by NRC through a plant-specific license amendment or NRC approval of generic methods specifically for use in NFPA 805 risk assessments, or methods that have been demonstrated to bound the risk impact.

(a) Prior NRC review and approval is not required for changes that clearly result in a decrease in risk. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. The change may be implemented following completion of the plant change evaluation.

(b) Prior NRC review and approval is not required for individual changes that result in a risk increase less than 1×10^{-7}/year (yr) for CDF and less than 1×10^{-8}/yr for LERF. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. The change may be implemented following completion of the plant change evaluation.

<u>Other Changes that May Be Made Without Prior NRC Approval</u>

(1) Changes to NFPA 805, Chapter 3, Fundamental Fire Protection Program

Prior NRC review and approval are not required for changes to the NFPA 805, Chapter 3, fundamental fire protection program elements and design requirements for which an engineering evaluation demonstrates that the alternative to the Chapter 3 element is functionally equivalent or adequate for the hazard. The licensee may use an engineering evaluation to demonstrate that a change to an NFPA 805, Chapter 3, element is functionally equivalent to the corresponding technical requirement. A qualified fire protection engineer shall perform the engineering evaluation and conclude that the change has not affected the functionality of the

component, system, procedure, or physical arrangement, using a relevant technical requirement or standard.

The licensee may use an engineering evaluation to demonstrate that changes to certain NFPA 805, Chapter 3, elements are acceptable because the alternative is "adequate for the hazard." Prior NRC review and approval would not be required for alternatives to four specific sections of NFPA 805, Chapter 3, for which an engineering evaluation demonstrates that the alternative to the Chapter 3 element is adequate for the hazard. A qualified fire protection engineer shall perform the engineering evaluation and conclude that the change has not affected the functionality of the component, system, procedure, or physical arrangement, using a relevant technical requirement or standard. The four specific sections of NFPA 805, Chapter 3, are as follows:

- "Fire Alarm and Detection Systems" (Section 3.8);
- "Automatic and Manual Water-Based Fire Suppression Systems" (Section 3.9);
- "Gaseous Fire Suppression Systems" (Section 3.10); and,
- "Passive Fire Protection Features" (Section 3.11).

(2) Fire Protection Program Changes that Have No More than Minimal Risk Impact

Prior NRC review and approval are not required for changes to the licensee's fire protection program that have been demonstrated to have no more than a minimal risk impact. The licensee may use its screening process as approved in the NRC Safety Evaluation Report dated ________ to determine that certain fire protection program changes meet the minimal criterion. The licensee shall ensure that fire protection defense-in-depth and safety margins are maintained when changes are made to the fire protection program.

<u>Transition License Conditions</u>

(1) Before achieving full compliance with 10 CFR 50.48(c), as specified by (2) below, risk-informed changes to the licensee's fire protection program may not be made without prior NRC review and approval unless the change has been demonstrated to have no more than a minimal risk impact, as described in (2) above.

(2) The licensee shall implement the following modifications to its facility to complete the transition to full compliance with 10 CFR 50.48(c) by __________.

(a) Modify the CO_2 system from manual to automatic actuation in the following fire areas:

- AA40
- AA43

(b) Modify motor operated valves to preclude IN 92-18 conditions in which control circuit short circuits can occur between control wiring and power sources leading to spurious operation of the valve, and in which the same postulated short circuit may bypass the torque/limit switches which, combined with the absence or bypass of thermal overload contacts, can result in continuous energization of the valve motor and potential mechanical damage to the valve such that manual operation via handwheel would be inhibited. The affected valves are identified in Attachment S.

The licensee shall maintain appropriate compensatory measures in place until completion of the modifications delineated above.

The license conditions to be replaced are restated below.

License condition 2.C(4) for Unit 1:

> Indiana Michigan Power Company shall implement and maintain, in effect, all provisions of the approved Fire Protection Program as described in the Final Safety Analysis Report for the facility and as approved in the SERs dated December 12, 1977, July 31, 1979, January 30, 1981, February 7, 1983, November 22, 1983, December 23, 1983, March 16, 1984, August 27, 1985, June 30, 1986, January 28, 1987, May 26, 1987, June 16, 1988, June 17, 1988, June 7, 1989, February 1, 1990, February 9, 1990, March 26, 1990, April 26, 1990, March 31, 1993, April 8, 1993, December 14, 1994, January 24, 1995, April 19, 1995, June 8, 1995, and March 11, 1996, subject to the following provision:
>
> The licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

License condition 2.C(3)(o) for Unit 2:

> Indiana Michigan Power Company shall implement and maintain, in effect, all provisions of the approved Fire Protection Program as described in the Updated Final Safety Analysis Report for the facility and as approved in the SERs dated December 12, 1977, July 31, 1979, January 30, 1981, February 7, 1983, November 22, 1983, December 23, 1983, March 16, 1984, August 27, 1985, June 30, 1986, January 28, 1987, May 26, 1987, June 16, 1988, June 17, 1988, June 7, 1989, February 1, 1990, February 9, 1990, March 26, 1990, April 26, 1990, March 31, 1993, April 8, 1993, December 14, 1994, January 24, 1995, April 19, 1995, June 8, 1995, and March 11, 1996, subject to the following provision:
>
> The licensee may make changes to the approved fire protection program without prior approval of the Commission only if these changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

It is I&M's understanding that, implicit in the replacement of these license conditions, all prior fire protection program SERs and commitments will be superseded in their entirety by the revised license condition.

No other license conditions need to be replaced or revised.

I&M implemented the following process for determining that these are the only license conditions required to be either revised or superseded to implement the new fire protection program which meets the requirements in 10 CFR 50.48(a) and 50.48(c):

- A review was conducted of the I&M Unit 1 Renewed License Number DPR-58, through Amendment No. 313 and Unit 2 Renewed License Number DPR-74, through Amendment No. 297, by the I&M licensing and NFPA 805 Transition Team. Outstanding LARs that have been submitted to the NRC but not yet approved were also reviewed for potential impact on the license conditions.

N. Technical Specification Changes

1 Page

None Required.

O. Orders and Exemptions

3 Pages

Exemptions

I&M is requesting that the following exemptions granted against 10 CFR 50, Appendix R dated December 23, 1983, May 26, 1987 and January 19, 2001 be rescinded:

- Exemption Request from the lack of automatic suppression for Fire Zone 1, RHR/CTS Pump Area, Auxiliary Building, Elevation 573 feet. (NRC SER Dated December 23, 1983)
- Exemption Request from the lack of fixed suppression for Fire Zone 14, Transformer Room, Elevation 591 feet, Unit 1 (NRC SER Dated December 23, 1983)
- Exemption Request from the lack of fixed suppression for Fire Zone 20, Transformer Room, Elevation 591 feet, Unit 2 (NRC SER Dated December 23, 1983)
- Exemption Request from the lack of fixed suppression for Fire Zones 29A,B,E, Unit 1 ESW Pumps and MCCs (NRC SER Dated December 23, 1983)
- Exemption Request from the lack of fixed suppression for Fire Zones 29C,D,F, Unit 2 ESW Pumps and MCCs (NRC SER Dated December 23, 1983)
- Exemption Request from the lack of automatic suppression for Fire Zone 29G, Circulating Water Pump MCC Room, Elevation 575 feet, both units(NRC SER Dated December 23, 1983)
- Exemption Request from the lack of fixed suppression for Fire Zones 33, 33A, and 33B, Unit I East Main Steam Valve Enclosure (NRC SER Dated December 23, 1983)
- Exemption Request from the lack of fixed suppression for Fire Zones 34, 34A and 34B, Unit 2 East Main Steam Valve Enclosure (NRC SER Dated December 23, 1983)
- Exemption Request from the lack of 3-Hour Rated Barrier between redundant CCW Systems in Fire Zone 44S, Auxiliary Building South, elevation 609 feet, both units (NRC SER Dated December 23, 1983)
- Exemption Request from the lack of fixed suppression for Fire Zone 53, Unit 1 Control Room (NRC SER Dated December 23, 1983)
- Exemption Request from the lack of fixed suppression for Fire Zone 54, Unit 2 Control Room (NRC SER Dated December 23, 1983)
- Exemption Request from the requirements of Section III.O, Reactor Coolant Pump Oil Collection System (NRC SERs Dated December 23, 1983 and January 19, 2001)
- Exemption Request from the requirements of Section III.J, Emergency Lighting (NRC SER Dated May 26, 1987)

Specific details regarding these exemptions are contained in Attachment K.

Orders

I&M determined that no orders need to be superseded or revised. I&M implemented the following process for making this determination:

- A review was conducted of the CNP docketed correspondence by I&M licensing and NFPA 805 Transition Team. The review was performed by reviewing the correspondence files and performing electronic searches of internal CNP records and the NRC's ADAMS document system.

A specific review was performed of the license amendment that incorporated the mitigation strategies required by Section B.5.b of Commission Order EA-02-026 to ensure that any changes being made to ensure compliance with 10 CFR 50.48(c) do not invalidate existing commitments applicable to the plant. The review of this order demonstrated that changes to the fire protection program will not affect measures required by B.5.b.

P. RI-PB Alternatives to NFPA 805 10 CFR 50.48(c)(4)

1 Page

No risk-informed or performance-based alternatives to compliance with NFPA 805 (per 10 CFR 50.48(c)(4)) were utilized by I&M.

Q. No Significant Hazards Evaluation

4 Pages

Pursuant to 10 CFR 50.91, Indiana Michigan Power Company (I&M) has made the determination that this amendment request involves a "No Significant Hazards Consideration" by applying the standards established by the NRC regulations in 10 CFR 50.92. This amendment does not involve a significant hazards consideration for the reasons described below.

To the extent that these conclusions apply to compliance with the requirements in National Fire Protection Association (NFPA) 805, these conclusions are based on NRC statements in the Statements of Consideration accompanying the adoption of alternative fire protection requirements based on NFPA 805.

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No.

   Operation of the Donald C. Cook Nuclear Power Plant (CNP) in accordance with the proposed amendment does not increase the probability or consequences of accidents previously evaluated. The Updated Final Safety Analysis Report (UFSAR) documents the analyses of design basis accidents (DBAs) at CNP. The proposed amendment does not adversely affect accident initiators nor alter design assumptions, conditions, or configurations of the facility and does not adversely affect the ability of structures, systems, and components (SSCs) to perform their design function. SSCs required to safely shut down the reactor and to maintain it in a safe and stable condition will remain capable of performing their design functions.

   The purpose of this amendment is to permit I&M to adopt a new fire protection licensing basis which complies with the requirements in 10 CFR 50.48(a) and (c), and the guidance in Revision 1 of Regulatory Guide (RG) 1.205. As indicated in the Statements of Consideration, the NRC considers that NFPA 805 provides an acceptable methodology and performance criteria for licensees to identify fire protection systems and features that are an acceptable alternative to the Appendix R fire protection features. Engineering analyses, which include engineering evaluations, probabilistic safety assessments, and fire modeling calculations, have been performed to demonstrate that the risk-informed, performance-based (RI-PB) requirements per NFPA 805 have been met.

   As indicated in the Statements of Consideration, NFPA 805 provides an acceptable alternative to 10 CFR 50.48(b) and satisfies 10 CFR 50.48(a) and General Design Criterion (GDC) 3 of Appendix A to 10 CFR Part 50, meets the underlying intent of the NRC's existing fire protection regulations and guidance, and provides acceptable defense-in-depth, goals, performance objectives, and performance criteria specified. Any impact on core damage frequency (CDF) or risk is small and consistent with the intent of the Commission's Safety Goal Policy. Based on this, the implementation of this amendment does not significantly increase the probability of any accident previously evaluated. Equipment required to mitigate an accident remains capable of performing the assumed function. Therefore, the consequences of any accident previously evaluated are not significantly increased with the implementation of this amendment.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any kind of accident previously evaluated?

   Response: No.

Operation of CNP in accordance with the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated. Scenarios and accidents with potential offsite dose are included in the evaluation of DBAs documented in the UFSAR. The proposed change does not alter the requirements or function for systems required during accident conditions. Implementation of the new fire protection licensing basis which complies with the requirements in 10 CFR 50.48(a) and (c) and the guidance in Revision 1 of RG 1.205 will not result in new or different accidents.

The proposed amendment does not adversely affect accident initiators nor alter design assumptions, or conditions of the facility. The proposed amendment does not adversely affect the ability of SSCs to perform their design function. SSCs required to maintain the units in a safe and stable condition remain capable of performing their design functions.

The purpose of the proposed amendment is to permit I&M to adopt a new fire protection licensing basis which complies with the requirements in 10 CFR 50.48(a) and (c) and the guidance in Revision 1 of RG 1.205. As indicated in the Statements of Consideration, the NRC considers that NFPA 805 provides an acceptable methodology and performance criteria for licensees to identify fire protection systems and features that are an acceptable alternative to the 10 CFR 50 Appendix R fire protection features.

The requirements in NFPA 805 address only fire protection, and the impacts of fire on the plant have been evaluated. Based on this evaluation, the implementation of this amendment does not create the possibility of a new or different kind of accident from any kind of accident previously evaluated. The proposed changes do not involve new failure mechanisms or malfunctions that can initiate a new accident. Therefore, the possibility of a new or different kind of accident from any kind of accident previously evaluated is not created with the implementation of this amendment.

3. Does the proposed amendment involve a significant reduction in the margin of safety?

   Response: No.

   Operation of CNP in accordance with the proposed amendment does not involve a significant reduction in the margin of safety. The proposed amendment does not alter the manner in which safety limits, limiting safety system settings, or limiting conditions for operation are determined. The safety analysis acceptance criteria are not affected by this change. The proposed amendment does not adversely affect existing plant safety margins or the reliability of equipment assumed to mitigate accidents in the UFSAR. The proposed amendment does not adversely affect the ability of SSCs to perform their design function. SSCs required to safely maintain the plant in a safe shutdown condition remain capable of performing their design functions.

   The purpose of this amendment is to permit I&M to adopt a new fire protection licensing basis which complies with the requirements in 10 CFR 50.48(a) and (c) and the guidance in Revision 1 of RG 1.205. The NRC considers that NFPA 805 provides an acceptable methodology and performance criteria for licensees to identify fire protection systems and features that are an acceptable alternative to the 10 CFR 50 Appendix R fire protection features.

   Engineering analyses, which include engineering evaluations, probabilistic safety assessments, and fire modeling calculations, have been performed to demonstrate that the performance-based methods do not result in a significant reduction in the margin of safety.

Based on this, the implementation of this amendment does not significantly reduce the margin of safety. The proposed changes have been evaluated to ensure that risk and safety margins are kept within acceptable limits. Therefore, the transition does not involve a significant reduction in the margin of safety.

Adoption of NFPA 805 will continue to provide protection of public health and safety and the common defense and security because the overall approach of NFPA 805 is consistent with the key principles for evaluating license basis changes, as described in RG 1.174, is consistent with the defense-in-depth philosophy, and maintains sufficient safety margins.

Margins previously established for the CNP fire protection program in accordance with 10 CFR 50.48(b) and Appendix R to 10 CFR 50 are not significantly reduced. Therefore, the proposed amendment will not result in a reduction in a margin of safety.

Based on the above, I&M concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92, paragraph (c), and, accordingly, a finding of "no significant hazards consideration" is justified.

R. Environmental Considerations Evaluation

2 Pages

I&M has evaluated the proposed amendment against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.21. I&M has determined that the proposed amendment meets the criteria for a categorical exclusion set forth in 10 CFR 51.22(c)(9). This determination is based on the fact that this change is being proposed as an amendment to a license issued pursuant to 10 CFR 50.

The purpose of the proposed amendment is to permit CNP to adopt a new fire protection licensing basis which complies with the requirements of 10 CFR 50.48(a) and (c) and the guidance in Revision 1 of Regulatory Guide 1.205. The NRC considers that NFPA 805 provides an acceptable methodology and performance criteria for licensees to identify fire protection requirements that are an acceptable alternative to the 10 CFR 50 Appendix R required fire protection features (69 FR 33536, June 16, 2004).

The proposed amendment does not involve:

1. A significant hazards consideration.

   As stated in Attachment Q, the proposed amendment does not involve a significant hazards consideration.

2. A significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

   Compliance with NFPA 805 explicitly requires the attainment of performance criteria, objectives, and goals for radioactive releases to the environment. This radioactive release goal is to provide reasonable assurance that a fire will not result in a radiological release that affects the public, plant personnel, or the environment. The NFPA 805 transition based on fire suppression activities, but not involving fuel damage, has been evaluated and does not create any new source terms. Therefore, the proposed amendment will not change the types or amounts of any effluents that may be released offsite.

3. A significant increase in the individual or cumulative occupational radiation exposure.

   Compliance with NFPA 805 explicitly requires the attainment of performance criteria, objectives and goals for occupational exposures. Therefore, the proposed amendment will not change the types or amounts of occupational exposures based on the results of the analysis performed and documented in Attachment E.

Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment is required to be developed in conjunction with the proposed amendment.

S. Plant Modifications and Items to be Completed during Implementation

9 Pages

Tables S-1 and S-2, Plant Modifications, include a description of the modifications along with the following information:

- A problem statement,
- Risk ranking of the modification,
- An indication if the modification is currently included in the Fire PRA,
- Compensatory Measure in place, and
- A risk-informed characterization of the modification and compensatory measure.

The following legend applies to the risk ranking indicated in Tables S-1 and S-2:

- High = Modification would have an appreciable impact on reducing overall fire CDF.
- Medium = 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.

Attachment S - Table S-1 Plant Modifications Completed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
S-1.1	High	1, 2	Cable in conduit associated with the credited train of dc electrical power for Fire Area AA39A and AA45A is unprotected and routed through the area	Provide 1-hour ERFBS with automatic suppression & detection for cable of concern in Fire Area AA39A and AA45A	Y	N	Fire PRA credits this modification for electrical power redundancy Compensatory measure: None; modification installed.
S-1.2	Low	1, 2	Actions identified in safe shutdown procedure for transferring 600V Bus to alternate source in Fire Areas AA14, AA23, AA39B and AA45B were not accurately identified.	Revised safe shutdown procedures to reflect correct actions.	N	N	Fire PRA does not credit these actions Compensatory measure: None; Procedures updated.

Attachment S - Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
S-2.1	Medium	1, 2	Short circuits can occur in the control circuit for motor operated valves between control wiring and power sources leading to spurious operation of the valve. The same postulated short circuit may bypass the torque/limit switches which, combined with the absence or bypass of thermal overload contacts, results in continuous energization of the valve motor and potential mechanical damage to the valve such that manual operation via handwheel would be inhibited. This potential condition was described in Information Notice (IN) 92-18	Modify the following ten (10) valves to resolve 92-18 issue: 1(2)-FMO-212 1(2)-FMO-222 1(2)-FMO-232 1(2)-FMO-242 1(2)-ICM-250	Y	N	Circuit failures which result in the inability of operators to perform a recovery action are significant contributors to both fire risk as well as internal events risk. The proposed modification will improve the ability of plant operators to manually align certain motor operated valves if required in order to maintain the plant in a safe and stable condition. Compensatory measure for NFPA 805: None; This modification will be completed prior to implementation of NFPA 805 FP Program.. Compensatory measure for 10 CFR 50 Appendix R: None; IN 92-18 concerns were addressed by the current licensing basis, which credits the "double break" circuit design, as described in NRC SE dated November 22, 1983.

Attachment S - Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
S-2.2	High	1, 2	Electrical cabinet fire scenarios in fire areas AA40 and AA43 contribute significantly to fire CDF and LERF and warrant additional mitigation	Modify the CO_2 system from manual to automatic actuation in the following fire areas: a) AA40 b) AA43	Y	N	This proposed modification will limit the extent of damage predicted to occur for fire scenarios within the subject fire areas. Compensatory measure for NFPA 805: None; This modification will be completed prior to implementation of NFPA 805 FP Program. Compensatory measure for 10 CFR 50 Appendix R: None; fire areas AA40 and AA43 are deterministically compliant with 10 CFR 50 Appendix R.

Table S-3, identifies those implementation items (procedure changes, process updates, and training to affected plant personnel) that will be completed by I&M prior to the implementation of new NFPA 805 FP program. These items will be completed within six (6) months after NRC issuance of the NFPA 805 SE.

Attachment S - Table S-3 Implementation Items

Item	Unit	Description	LAR Section / Source
S-3.1	1, 2	Initial General Employee Training (GET) will be verified and / or updated to include the minimum fire protection program elements as discussed in Section K to NEI-04-02 (FAQ 06-0028).	4.1.2 and Attachment A
S-3.2	1, 2	The monitoring program required by NFPA 805 Section 2.6 will be developed in accordance with NFPA 805 FAQ 10-0059, and will include a process that reviews the FPP performance and trends in performance and implemented after the LAR approval as part of the FPP transition to NFPA 805.	4.1.2, 4.6, and Attachment A
S-3.3	1, 2	Transient Combustible Free Zones will be established in high risk Fire Areas AA40, AA41, AA43, and AA44	4.5 and Attachment W
S-3.4	1, 2	Hot Work Restriction Zones will be established in high risk Fire Areas AA50, AA51, and the cable spreading portions of AA48 and AA52	4.5 and Attachment W
S-3.5	1, 2	Post-fire operating procedures will be updated to reflect new NSCA strategies and training performed as necessary.	4.2.1.3 and Attachment G
S-3.6	1, 2	Technical and administrative procedures and documents that relate to non-power modes of plant operating states will be revised as needed for implementation of NFPA 805.	4.3.2 and Attachment D
S-3.7	1, 2	Pre-fire plans and fire brigade training materials will be revised to reflect changes required to meet the NFPA 805 radioactive release performance criteria.	4.4.2 and Attachment E

Attachment S - Table S-3 Implementation Items

Item	Unit	Description	LAR Section / Source
S-3.8	1, 2	A confirmatory demonstration (field verification walk-through) of the feasibility for the credited NFPA 805 recovery actions will be performed. This will include field verification of: (1) Transit times (i.e., travel times to/from recovery action manipulated plant equipment). (2) Execution times (i.e., time required to physically perform the action, such as handwheel a valve open, open a breaker, etc.). (3) Communications for adequacy between the controlling location and recovery action locations for areas which involve actions. (4) Adequate lighting (either fixed or portable) for access/egress and local lights are provided for the component to be operated.	4.2.1.3 and Attachment G
S-3.9	1, 2	CNP calculation PRA-FIRE-17663-012-LAR, "Post-Fire Human Reliability Analysis" and Technical Evaluation R1900-0026-001, "Recovery Action Transition for NFPA 805" will be reviewed and updated based on the results of the field walkdowns of the recovery actions (Item S-3.8).	4.2.1.3 and Attachment G
S-3.10	1, 2	Technical documents and procedures that relate to new FP design and licensing basis (e.g., FPPM, Technical Requirements Manual, Design Basis Document, maintenance and surveillance, configuration control, training and qualification guidelines, QAPD, etc.) will be revised as needed for implementation of NFPA 805.	4.7.1, 4.7.2, 4.7.3

Attachment S - Table S-3 Implementation Items

Item	Unit	Description	LAR Section / Source
S-3.11	1, 2	A new restoration procedure (1/2-OHP-4025-R-XX series) will be developed to address re-powering the hydrogen igniters following a fire in Fire Areas AA40, AA43, AA46, AA47, AA48, AA50, AA51 and AA52	Attachment W
S-3.12	1, 2	The current transformer evaluation (Technical Evaluation 12.6) will be updated to address those CTs that currently have not screened out as sufficient CT data becomes available.	4.2.1.1/Attachment B
S-3.13	1,2	UFSAR Section 9.8.1 will be revised as needed for implementation of NFPA 805.	4.7.1
S-3.14	1,2	Applicable operating procedures will be revised to include the treatment of Fire PRA Actions added to the 'base fire PRA model' that mitigate 'fire induced failures – but are not associated with the NSCA success path.	

T. Clarification of Prior NRC Approvals

1 Page

No clarifications of prior NRC approvals are requested by I&M

U. Internal Events PRA Quality

29 Pages

I&M considers that the CNP Internal Events PRA is adequate to support the NFPA 805 Licensing Basis. A Peer Review was conducted September 24th - 28th, 2001. The Peer Review noted a number of facts and observations (F&Os) based on the sub-elements included in the then-current NEI guidance for conduct of peer reviews. The PWR Owner's Group issued a report containing the results of the CNP Internal Events PRA Review at the end of December 2002. Summaries of these F&Os, the status of the disposition of the F&Os, and the impact of open F&Os are provided in Table U-1. Following resolution of all significant F&Os from the 2001 Peer Review, a Gap Assessment was performed in 2004 by an independent contractor. The Gap Assessment provided comments related to a number of the then-current ASME PRA Standard supporting requirements. These comments and the cited supporting requirements, disposition status, and disposition impact for NFPA-805 are also included in Table U-1. Following several model updates, a Focused-Scope Peer Review was conducted in 2009. The Focused-Scope Peer Review identified a number of Findings & Observations (also F&Os) based on the supporting requirements in the-then current NRC Regulatory Guide 1.200, Revision 1. Summaries of these F&Os, disposition status, and disposition impact for NFPA 805 are also included in Table U-1. The detailed findings and comments from both the 2001 Peer Review and 2004 Gap Assessment have been previously submitted to NRC, and along with the 2009 Peer Review are available to NRC staff if additional detail is needed.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
AS-01	The Large Loss of Coolant Accident (LOCA) event tree discussion of gross containment failure does not appear consistent with the stated assumption; in this instance the discrepancy probably does not change the conclusion that core damage occurs so late as to not qualify as part of Large Early Release Frequency (LERF). (Significance Level C)	Open	The numerical impact of this Fact and Observation (F&O) on the Internal Events Probabilistic Risk Assessment (PRA) results is judged very small. Since no fire consequentially causes a Large LOCA event, there is no effect of this F&O on NFPA-805 change evaluations (i.e., the same contribution occurs in both the before and after results).
AS-02	The medium LOCA event tree discussion on long term cooling states seems to indicate that more heat removal is required than the success criterion. (Significance Level C)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category (CC) II.
AS-03	The Main Steam Line Break Inside Containment (SLBI)event tree discussion states that the Main Steam Line Break Outside Containment (SLBO)is covered by the SLBI tree, although the mitigation requirements of these events are different with respect to isolation and containment systems. (Significance Level C)	Open	The numerical impact of this F&O on the Internal Events PRA results is judged very small. Since no fire consequentially causes a Main Steam Line Break (SLB) event, there is no effect of this F&O on NFPA-805 change evaluations (i.e., the same contribution occurs in both the before and after results).
AS-04	In the event tree for Station Black-Out (SBO), existing logic for Auxiliary Feed Water (AFW) functions asked successively does not require correlation between success of the prior branch and the failure of the latter branch. (Significance Level C)	Open	The numerical impact of this F&O on the Internal Events PRA results is judged to be zero. Either path through a failure branch requires three failed AFW flow paths. Common Cause Failures (CCFs) are included in first possible failure path. Since there is no effect on the Internal Events PRA model, this F&O has no impact for NFPA-805.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
AS-05	Although no inconsistencies in modeling of systems to meet the safety functions were identified, there is no discussion of functional failure criteria for the event trees. (Significance Level C)	Open	This is a documentation issue that has no effect on the Internal Events PRA model, and, as a result, there is no effect of this F&O on NFPA-805.
AS-06	The success criterion for feed and bleed is conservative compared to the criterion used for some other 4-loop Westinghouse plants. (Significance Level C)	Open	This F&O implies that the success criterion used for feed and bleed is also conservative in the Fire PRA. Given the abundant AFW availability at CNP, the numerical impact of this bleed and feed conservatism is judged very small for the Internal Events PRA model. The numerical effect of such a conservatism would be to increae the Core Damage Frequency (CDF) for fires that affect the systems used to perform bleed and feed. This would cause the Fire PRA to be more conservative in feed and bleed scenarios since less fire-related damage can cause failure of the function. This additional conservatism would increase the fire risk estimated for NFPA-805 change evaluations.
AS-07	Initiating event dependencies are not retained by event tree transfers. (Significance Level A)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
AS-08	Reactor Coolant Pump (RCP) Seal LOCA modeling in the loss of service water event trees is different than in the SBO event trees and needs to be made consistent. (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
AS-09	After recovery of Alternating Current (AC) power, after SBO, the PRA conservatively requires recovery for alignment of Safety Injection (SI), Charging and Volume Control System (CVCS), Containment Spray (CTS), and AFW, however, the systems may not be needed or may be initiated automatically. (Significance Level C)	Open	The numerical impact of this F&O on the Internal Events PRA results is judged very small. Pump recovery failure in the internal events PRA model is dominated by operator actions. The effect of this F&O would be an increase in predicted fire risk following fire-induced SBO, since operator actions are more complicated. This would increase the fire risk estimated for NFPA-805 change evaluations.
AS-10	The event trees do not include a heading for containment isolation failure, resulting in improper assignment of LERF. (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
AS-11	Dependencies between the failures causing Interfacing Systems Loss of Coolant Accidents (ISLOCA) in the individual ISLOCA scenarios and the systems mitigating ISLOCA are not considered. (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
AS-12	The ISLOCA analysis assumes low pressure piping failure probability based solely on engineering judgment. (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
AS-A1, AS-B1, AS-B2, AS-B4, AS-B5, SY-C1	The split fraction dependencies and corresponding values (basis) are not well documented or described in the report. For example, top event "CSR" has 21 split fractions (each with a different value) identified in the CCW event trees. However, the only way to follow what the dependencies are and how the different fraction values are calculated, is to go to the WINNUPRA calculation files. Even using the WINNUPRA files, not all boundary conditions could be determined.	Open	This issue only impacts the Internal Events PRA model documentation. This issue does not affect NFPA-805 change evaluations.
AS-A1, QU-C3	The number of considered transfers is too large; even very unlikely transfer events are modeled (<1E-08/yr). For example, the Initiating Event frequency for Medium LOCA, transferred from a loss of DC is 8E-9/yr. Even at this low frequency, this combined event is still modeled and there is an event tree associated with	Closed	This issue was addressed in a 2007 update that included simplifying the event tree transfers.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
AS-A10, AS-B3, SC-A6	ISLOCA modeling should: (1) separate the human reliability (OIB) and hardware (valve) reliability when modeling potential isolation of the appropriate breaks, (2) address valve shutoff delta-P capability for valves credited for isolation, (3) valve failure rates indicative of functional degradation due to harsh environment for Residual Heat Removal (RHR) pump seal failure events, (4) operations procedures should address remote manual isolation of ISLOCA events.	Open	This issue relates specifically to the Internal Events PRA model. Since no fire consequentially causes an Interfacing Systems LOCA on one of the modeled pathways, there is no effect of this F&O on NFPA-805 change evaluations (i.e., the same contribution occurs in both the before and after results).
AS-A10, SC-A12, SC-A18, SY-A3, SY-A5, SY-A6, SY-A7, SY-B1, SY-B16	Enhance AFW system modeling related to Condensate Storage Tank (CST) refill by adding a discussion about CST refill system boundaries, capacities and dependencies, and any potential CCF modes. Also, model the HEP separate from the hardware.	Open	The numerical impact of this SR on the Internal Events PRA results is judged very small. The Gap assessment commented that the approach used was reasonable given the supporting information available, but that providing additional system detail and separating the HEP and hardware would be a benefit to the model. The Fire PRA has accounted for the possibility that one or more fire initiators could preclude refilling the CST, so the effect of this SR is implicit in NFPA-805 results.
AS-A2-01	The accident sequence notebook does not identify the safety functions necessary to reach a safe and stable state to prevent core damage following the initiating events. (Finding)	Open	The development of accident sequences did inherently consider safety functions required to reach a safe, stable state by virtue of the historical development of the Event Trees and by following the EOPs which are based on assuring that the safety functions are met. This is a documentation issue that has no numerical impact on the Internal Events PRA model. This issue does not affect NFPA-805 change evaluations.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
AS-A5	Consider a review and update of MAAP analyses for success criteria pertaining to accident sequence development associated with SBO and RCP Seal LOCA.	Closed	The Internal Events PRA model was updated to account for the addition of SDGs to the plant in 2005. As part of this model update improved event tree modeling and success criteria were adopted for RCP seal LOCAs.
AS-B3, LE-D1, LE-D6	Address if there are any phenomenological interactions that should be considered as potential failure modes of containment isolation. In the containment isolation model, I&M should consider accounting for the possibility of up to 200 hrs per year (2.3E-02) containment purge operation when purge valves could be open and could randomly fail to close on demand.	Open	The containment pressure relief operation the failure rate is so small that it has not been included in the fault tree model. The failure probability is the product of the time fraction and two isolation valves failing, which is more than two orders of magnitude lower than the than the highest failure cutset probability that results in the same effect on containment isolation. With respect to the remaining issue, the Gap assessment commented that there should not be any phenomenological interactions that are potential failure modes of containment isolation. This issue only impacts the Internal Events PRA model documentation. This issue does not affect NFPA-805 change evaluations.
DA-01	The data collection notebook provides a description of the criteria, in terms of evidence, for performing a Bayesian update which is inconsistent with industry references and the guidelines for common cause failure data analysis seems to not be in accordance with the cited reference. (Significance Level C)	Open	The Internal Events PRA model update in 2009 included revising failure data for Mitigating Systems Perfromance Indicator (MSPI) pumps and diesels, accounting for the latest plant-specific failure data. The 2009 calculation was performed in accordance with NURG/CR-6928, including Bayesian updating. In addition, a CCF update was also performed consistent with the latest industry and NRC guidance. The remaining issue from this F&O is related to updating the notebook to discuss/reference the methodologies employed. This remaining documentation issue does not affect NFPA-805.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
DA-02	The method used to perform Bayesian updates is often described as moment matching, which in some cases may yield misleading results. (Significance Level C)	Open	The Internal Events PRA model update in 2009 included revising failure data for MSPI pumps and diesels, accounting for the latest plant-specific failure data. The 2009 calculation used generic data distributions from NURG/CR-6928, Bayesian updated per NUREG/CR-6928, and mapped the results to the natural conjugate. No moment matching was performed to obtain the prior distribution. The remaining issue is related to updating the documentation and does not affect NFPA-805.
DA-03	General guidelines for test and maintenance data collection are provided, however, the boundaries of the components and subsystems to be included in maintenance basic event were not defined in the data collection sheets or in the data notebooks. (Significance Level C)	Open	The Internal Events PRA model update in 2009 included revising failure data for MSPI pumps and diesels, accounting for the latest plant-specific failure data. The 2009 calculation identified the data to be collected and the sources for the data. The remaining issue is related to updating the documentation and does not affect NFPA-805.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
DA-04	Multiple Greek Letter (MGL) parameters from Table 5-11 of NUREG/CR-5485 were used to obtain CCFs for some components in the CNP PRA There are limitations on using such data, which I&M did not appear to observe At least one of the reviewers felt that the significance of this observation should be "B," given the rationale above. AEP PRA personnel indicated that: they understood the individual issues identified; that the issues regarding assumptions were primarily documentation rather than results impacts; and that the issue of which generic data source is appropriate is generic and, to some extent, a matter of preference, and that they are comfortable with the approach they have used. The significance "C" has been assigned on the basis of this understanding, but AEP is encouraged to consider the suggested resolutions noted below. (Significance Level C)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
DA-05	Plant specific screening of generic common cause failure data is insufficient and component boundaries defined for common cause modeling have not been verified. (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
DA-06	The 4160 and 600VAC Electric System Notebook lists the common cause failure group for the Emergency Diesel Generators (EDGs) as being the Unit 1 EDGs, however, all four EDGs belong to a single common cause group. (Significance Level D)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
DA-07	The data notebook does not indicate that a systematic approach was used to identify plant specific common cause failure groups. (Significance Level C)	Open	The Internal Events PRA model update in 2008 included revising CCF groups and data. This effort systematically redefined the CCF groups in a manner consistent with industry guidance. The remaining issue from this F&O is related to updating the notebook to discuss/reference the methodologies employed. This remaining documentation issue does not affect NFPA-805.
DA-08	The degree of conservatism in the "unique unavailabilities" is not in all cases either best estimate known to be conservative, but this is judged not to have a significant effect on the results at this time. (Significance Level C)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
DA-09	Data notebook was not signed by the reviewer indicated on its cover of notebook, so it is not clear the document has actually been reviewed by the reviewer, and, the document has not been approved. (Significance Level C)	Closed	The data notebook has been updated twice (once completely, Rev. 3 and once partially, Rev. 3 CS-1) and additional supporting calculations have been completed since this F&O was written. All documents have been signed in accordance with applicable processes. No further disposition required for Internal Events PRA model. This F&O does not affect NFPA-805.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
DA-C1	In many cases there is no description for the basic events or the description lacks sufficient detail to understand what the basic event is modeling.	Open	This issue only impacts the Internal Events PRA model documentation. This issue does not affect NFPA-805 change evaluations.
DA-C1	Provide a clear description of the boundaries that make up each basic event. Such a description is provided only for the EDGs and is not provided consistently for other basic events.	Open	The data collection did consider established boundaries but did not include references to the boundary definitions that were used. This is a documentation issue that has no numerical impact on the Internal Events PRA model. This issue does not affect NFPA-805 change evaluations.
DA-C1	There is inconsistency in describing dominant basic events in the systems analyses. For example, the CCW system note book describes an important contributors to system unavailability as heat exchanger "rupture" but the basic event modeled is "tube plugging"	Open	This issue only impacts the Internal Events PRA model documentation. This issue does not affect NFPA-805 change evaluations.
DA-D4-01	A Bayesian update process was used to combine industry-generic and plant-specific data for pumps and emergency diesel generators. No documentation or discussions with the utility demonstrated that the posterior distributions were checked for reasonableness. (Finding)	Open	The Bayesian updated data have been reviewed and appear to be reasonable. This issue impacts the Internal Events PRA model documentation. This issue does not affect NFPA-805 change evaluations.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
DA-D6-01	Review of the CCF Notebook shows that EDG CCFs for failure to start and failure to run were calculated s separately from the associated room cooling fans. These CCF values are based on NUREG/CR-5497 generic CCF parameters that include the EDG room fans within the boundary of the EDG. The explicit modeling of the EDG room cooling fans may lead to additional conservatism of EDG sub-components. (Suggestion)	Open	The numerical impact of this F&O on the Internal Events PRA results is judged very small. Since these failures are independent of fire initiators, there is no effect of this F&O on NFPA-805 change evaluations (i.e., the same contribution occurs in both the before and after results).
DA-E2-01	Error factor (characterization of uncertainty) discrepancies were identified between supporting calculation reports. (Finding)	Open	This issue only impacts the Internal Events PRA model documentation. This issue does not affect NFPA-805 change evaluations.
DA-E2-01	There is evidence to suggest that established component boundaries were considered in the data collection process, but the component boundary definitions that were used were not stated or referenced. Component boundary definitions should be developed and included or cited as reference. (Finding)	Open	The data collection did consider established boundaries but did not include references to the boundary definitions that were used. This is a documentation issue that has no numerical impact on the Internal Events PRA model. This issue does not affect NFPA-805 change evaluations.
DA-E3-01	The sources of key uncertainty associated with the data analysis were not clearly documented. (Suggestion)	Open	The numerical impact of this F&O on the Internal Events PRA results was judged very small. This issue will be separately addressed for the Fire PRA model developed in support of NFPA-805.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
DE-01	A procedure which is less systematic than NUREG/CR-4780 was used to develop the component groups for common cause, however, the groupings used are reasonable. (Significance Level C)	Closed	The disposition for Internal Events PRA model Significance Level B F&O DE-02 also addresses this F&O, so this Supporting Requirement was also brought up to at least Capability Category II.
DE-02	CCF groupings appear to be inconsistent with respect to whether running and standby components are grouped together. (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
HR-01	Cause-Based Decision Tree Method (CBDTM) was used for quantification of the post accident cognitive errors, but use of CBDTM alone may result in conservative and non plant specific Human Error Probability (HEP) values which may shadow actual important risk contributors. (Significance Level C)	Open	This issue relates specifically to the Internal Events PRA model. Operator actions analyzed for Fire-response are performed in accordance with Fire PRA guidance. Accordingly, there is no effect of this F&O on NFPA-805 change evaluations (i.e., the same contribution from this issue occurs in both the before and after results).
HR-02	Miscalibration of instruments was not addressed. This may result in underestimation of actual risk since miscalibration can affect multiple trains like a common cause failure. (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
HR-03	Use of bounding HEPs was identified. Use of bounding HEPs will produce unrealistic results and may shadow actual dominant contributors to the risk. (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
HR-04	Table 1 in the Human Reliability Analysis (HRA) notebook is confusing and there should be some additional explanation provided about what the Table is presenting, to aid in understanding how the information is tied to the PRA model and results. (Significance Level C)	Closed	This F&O was explicitly addressed by a subsequent HRA-related calculation. This is a documentation issue with no numerical effect on the Internal Events PRA model. As a result, there is no effect of this F&O on NFPA-805.
HR-C1	F&O #SY-9 stated that in part, "In a couple of places in the SI and AFW system models, hardware failures are not explicitly modeled because they are dominated by operator action failures…." The thrust of this F&O was on the AFW system as related to the modeling of CST refill. However, there was no apparent disposition of the SI model for combining a human action with hardware failures into a single basic event. These single HEP basic events can sometimes mask importance/success of the related hardware.	Open	No examples of basic events that combined an operator action and hardware (or ignored hardware) in the Internal Events PRA SI system model were provided in the F&O, nor could any be identified. However, it is noted that in the PRA model prior to the 2003 F&O response update, RCP trip failure following loss of service water initiators only included HEPs. In this case, appropriate hardware failures were added into the fault tree as part of the 2003 F&O model update. Per the preceding SR discussion, the Fire PRA has addressed the CST portion of this SR, so the effect of this SR is implicit in NFPA-805 results.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
HR-G6-01	There is no evidence that DC Cook checked the internal consistency of the HEPs either for the three Human Failure Events (HFEs) covered by this review or their complete set of HFEs, although there is no appearance of inconsistency. (Finding)	Open	A complete review of the HEPs and a HEP dependency analysis have been performed for earlier versions of the Internal Events PRA model. These documents were not included in the list of references made available to the Peer Review team. This issue impacts the Internal Events PRA model documentation. This issue does not affect NFPA-805 change evaluations.
IE-01	The sum of the mean values for the lognormal distributions that describe the generic single and dual unit loss of offsite power frequency derived are in the range of other generic estimates but their variance appears lower. (Significance Level C)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
IE-02	There are several cases where an initiating event category with more severe impact is subsumed by another category with less severe impact. This may have a significant affect on the calculated CDF. (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
IE-03	It appears that all initiator categories are accounted for, but a cross reference mapping categories to an acceptable source would ensure completeness. (Significance Level C)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
IE-04	Although the initiators retained for system losses that lead to initiating events seem reasonable, the structured process used to obtain these results was not discussed in the model documentation. (Significance Level C)	Open	This issue relates specifically to the Internal Events PRA model. There is no effect of this F&O on NFPA-805 change evaluations (i.e., the same contribution from this issue occurs in both the before and after results).
IE-05	A single value is used for the probability of pressurizer Power Operated Relief valve (PORV) or safety valve challenge following all transients, without any other considerations for how the probability might depend on the transient. (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
IE-07	The Loss of Direct Current (DC) initiating event was quantified by fault tree analysis and obtains results that are not comparable result to other plants. (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
IE-C1	A good justification is lacking for why earlier years of operational experience are excluded (207 trips) in the plant trip initiation frequency. Note, however, that these trips are accounted for when evaluating the PORV challenge frequency.	Open	This issue only impacts the Internal Events PRA model documentation. This issue does not affect NFPA-805 change evaluations.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
IF-B3-01	Flood source flow rates and capacities were determined without considering source temperatures. It also appears that High Energy Line Break (HELB) was excluded from the Internal Flood Analysis because it was performed separately. (Suggestion)	Open	The numerical impact of this F&O on the Internal Events PRA results is judged very small. Since these failures are independent of fire initiators, there is no effect of this F&O on NFPA-805 change evaluations (i.e., the same contribution occurs in both the before and after results).
IF-C3-01	The Systems, Structures and Components (SSCs) affected by any given flood are listed in an Attachment of a PRA calculation. However, the list does not identify the specific flood-induced failure mechanism for these SSCs. (Suggestion)	Open	This issue only impacts the Internal Events PRA model documentation. This issue does not affect NFPA-805 change evaluations.
L2-01	Editorial Comment: Section 3.0 reference to DG-1061 should be changed to RG-1.174. (Significance Level D)	Open	This documentation issue has no numerical implications for the Internal Events PRA model. Accordingly, there is no effect of this F&O on NFPA-805.
L2-02	The impact of containment failure prior to core mode has been evaluated with respect to LERF, assuming that offsite protective actions would have directed evacuation of the surrounding population prior to core damage, and this may not be reasonable for large LOCA initiated sequences. (Significance Level C)	Open	This issue relates specifically to the Internal Events PRA model. There is no effect of this F&O on NFPA-805 change evaluations (i.e., the same contribution from this issue occurs in both the before and after results).

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
L2-03	At CNP, actions to depressurize the Reactor Coolant System (RCS), e.g., open PORVs, at the onset of core damage have been moved from the Emergency Operating Procedures (EOPs) to the Severe Accident Mitigatino Guidelines (SAMGs), which may impact the generic containment failure probabilities in the simplified LERF model, since they implicitly include the likelihood of such action. (Significance Level C)	Open	This issue identifies that the Internal Events PRA model conservatively determines LERF because no credit is taken for opening PORVs (whether directed by EOPs or SAMGs) to lower RCS pressure after the onset of core damage. Although this approach is consistent with the guidance provided for the simplified LERF model used, the CC for this sub-element is I. This over-estimate of LERF implies that NFPA-805 change evaluations will be obtain more limiting delta-LERF values than a more realistic model achieving a CC II.
L2-04	The LERF calculation omitted containment isolation failure from the LERF equation based on its low probability, but neglected the contribution due to "pre-existing failures." (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
L2-05	Generic split fractions from the NUREG/CR-6595 simplified LERF model are assumed to apply without any specific evaluation to support the assumption. (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
LE-A1, LE-B1, LE-C3, LE-C4, LE-D1, LE-E1	Use of NUREG/CR 6595 for containment modeling is considered “conservative” and is considered by RG-1.200 to be Capability Category I.	Open	This SR implies that the LERF model is also conservative for the Fire PRA. The numerical effect of such a conservatism would be to increase the predicted LERF for fire initiators. This conservatism would increase the fire risk estimated for NFPA-805 change evaluations based on LERF.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
MU-01	Draft PRA Maintenance and Update Procedure could be improved by focusing the list of criteria on key items with specific actions or directions for analysts. (Significance Level C)	Closed	The PRA Maintenance and Update Procedure was finalized. Specific direction for calculation preparers and reviewers to use guidance in the applicable standards is included. This procedure revision wa performed to satisfy an F&O from the Fire PRA Peer Review. Accordingly, there is no effect of this F&O on NFPA-805.
MU-02	There is not currently a formal procedure or process for the control of the PRA models. (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
QU-02	A house event structure for Loss of DC has been incorrectly developed in fault trees developed for Component Cooling Water (CCW) and possibly Essential Service Water (ESW). (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
QU-03	The calculation of ISLOCA initiating event frequency does not consider correlated failures of valves in series, i.e., RHR discharge and suction (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
QU-04	Some loss of CCW and ESW sequences involving tripping the RCPs, depressurizing the RCS, and restoring CCW or ESW, appear to be overly optimistic. (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
QU-05	Multiple frequency truncation limits are used in the quantification for different events. There is evidence that the model results tend to converge as the truncation is lowered, however, demonstration of results convergence could be enhanced. (Significance Level C)	Open	Adequate convergence is demonstrated by comparison of the latest Internal Events PRA model results for cases with truncation levels at least 5 and 7 orders of magnitude below event probability (e.g.,. CDF increase < 5%). The remaining issue from this F&O is related to documentation and does not affect NFPA-805.
QU-06	A formal search performed for unique or unusual sources of uncertainty not present in the typical or generic plant analysis is not sufficiently documented. (Significance Level C)	Open	The numerical impact of this F&O on the Internal Events PRA results was judged very small. This issue will be separately addressed for the Fire PRA model developed in support of NFPA-805.
QU-07	There are inconsistencies in the HRA modeling of dependency between RCS cooldown and depressurization and transfer to recirculation. (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
QU-F5	I&M should consider documenting the process used for independent review of computer code results as part of the PRA general guidance document.	Open	This issue only impacts the Internal Events PRA model documentation. This issue does not affect NFPA-805 change evaluations.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
SC-A2	Explain the potential impact on the model and associated success criteria with regard to the conservative nature of MAAP analyses which assume a core damage temperature threshold of 1400F.	Open	The impact of this core damage criterion is limited to a small number of scenarios; i.e., those for which the inventory makeup success criterion results in turning around the core temperature excursion after core temperature exceeds 1400 F but before it reaches 2200 F. The numerical effect of such a conservatism may be a larger CDF than the assumption of the higher core damage threshold. Since this conservatism depends on inventory make-up requirements, the estimated Fire CDF may also be larger. This would tend to increase the conservatism in NFPA-805 change evaluations since more degraded support states would benefit from the higher core damage threshold.
ST-02	Erroneous screening criteria used for Internal Flooding (IF) Analysis causes under-prediction of IF Risk. (Significance Level A)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
SY-01	The calculation for Unfavorable Exposure Time (UET) for Anticpated Transient Without Scram (ATWS) pressure relief generally follows the approach defined in WCAP-11992, however, the calculated UETs are expressed as “fraction of cycle” without adjustment for use in annual CDF calculations, as specified in the WCAP. (Significance Level C)	Open	This issue relates specifically to the Internal Events PRA model. There is no effect of this F&O on NFPA-805 change evaluations (i.e., the same contribution from this issue occurs in both the before and after results).

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
SY-02	Assumptions about PORV block availability in the PORV logic models appear to be overly-conservative and not well supported, while the basis for the air bottle capacity appears to be inadequately documented. (Significance Level C)	Open	The numerical impact of this F&O on the Internal Events PRA results is judged very small if PORV block valve availability is increased. The overly-conservative failure probability implies that fire scenarios that induce other PORV failure are more likely to proceed to core damage. This over-estimate of PORV failure implies that NFPA-805 change evaluations will be obtain more limiting delta-CDF values than a more realistic model.
SY-03	Editorial Comments for AFW Notebook Assumptions. (Significance Level D)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
SY-04	In the SI system notebook, the success criteria for the different combinations of pumps required for success are listed without specifying the scenarios to which they apply. (Significance Level C)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
SY-05	Diversion flow paths that adversely affect success criteria or timing of events may have been eliminated without sufficient justification. (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
SY-06	Although the high pressure injection fault tree includes individual failures of two series valves whose closure prevents flow diversion, a small portion of the failure of this action is missed because the common cause factor is neglected. (Significance Level C)	Closed	The Internal Events PRA model update in 2008 included revising CCF groups and data. This effort added the identified CCF group and basic events to the model. This issue does not affect NFPA-805.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
SY-07	Although the PRA modeling approach for systems with a normally running pump on one train is reasonable, it is not explained in the SI Notebook where it is used for CVCS pumps. (Significance Level D)	Open	This is a documentation issue that has no numerical impact on the Internal Events PRA model. This issue does not affect NFPA-805 change evaluations.
SY-08	Although the model correctly accounts for potential ESW and CTS fouling but the documentation could be improved. (Significance Level D)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
SY-09	In a couple of system models, component hardware failures are not modeled explicitly because they are dominated by operator action failures. (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
SY-10	There seems to be inconsistency between the success criteria and the implementation in the model for the pressure relief success criteria for ATWS. (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
SY-11	Passive failure modeling in the loss of service water system initiating event logic is inadequate. (Significance Level A)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
SY-12	Common cause failure modeling for 250V DC battery chargers was not included in the model. (Significance Level C)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
SY-13	The documentation provides a reasonable basis for performing the system analysis and, in general, maintains consistency with proven approaches, but does not include a discussion of the potential for initiating events due to system faults, a discussion of spatial dependencies, or a table of both support systems and the effect on the component of the loss of the support system. (Significance Level C)	Open	This is a documentation issue that has no numerical impact on the Internal Events PRA model. This issue does not affect NFPA-805 change evaluations.
SY-14	The only guidance available for systems analyses is the guidance from the Individual Plant Examination (IPE). (Significance Level C)	Open	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
SY-15	The system notebook for the EDGs states that the capacity of the EDG day tanks will supply the EDGs for 2 hours, but the notebook does not explicitly identify that fuel oil is included in the fail-to-run probability. (Significance Level D)	Open	This is a documentation issue that has no numerical impact on the Internal Events PRA model. This issue does not affect NFPA-805 change evaluations.
SY-16	In the PORV fault tree for automatic operation, the hardware required for pressure sensing and signal generation is not modeled. (Significance Level C)	Open	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
SY-17	Cross-tie for AFW from Unit 2 does not consider the need for AFW at Unit 2, so the fault trees presume both motor driven pumps at Unit 2 are available for supply to unit 1 in the event the three pumps at Unit 1 fail. (Significance Level C)	Open	The numerical impact of this F&O on the Internal Events PRA results is judged very small. Since no fire consequentially causes the other unit's AFW fail, there is no effect of this F&O on NFPA-805 change evaluations (i.e., the same contribution occurs in both the before and after results).
SY-18	The fault trees have limited modeling of passive failures, functional failures and "subtle interactions." (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
SY-19	Recovery for ESW and CCW does not consider the cause of failure; NSAC-161 recovery factors are applied to all system failures evenly. (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.
SY-20	The model correctly includes sump strainer plugging, but the documentation is incorrect. (Significance Level D)	Open	This is a documentation issue that has no numerical impact on the Internal Events PRA model. This issue does not affect NFPA-805 change evaluations.
SY-A15-01	The SDG model does not include pre-existing maintenance errors. Section 5.2 of the SDG notebook discusses pre-existing maintenance errors and the basis for excluding them. While the exclusion bases are appropriate, it is suggested that a tie to the screening criteria employed be included in the text. (Suggestion)	Open	This issue only impacts the Internal Events PRA model documentation. This issue does not affect NFPA-805 change evaluations.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
SY-A19-01	The Supplemental Diesel Generator (SDG) notebook does not identify the environmental conditions such as excessive heat loads, excessive electrical loads or excessive humidity that might lead to SDG system failure. (Finding)	Open	The SDG design did consider environmental factors since the SDGs are a backup for the EDGs. This is a documentation issue that has no numerical impact on the Internal Events PRA model. This issue does not affect NFPA-805 change evaluations.
TH-01	The medium LOCA event tree analysis assumes that upon failure of AFW, feed and bleed is required, but success of AFW should not be required and feed and bleed should be unnecessary. (Significance Level C)	Open	The numerical impact of this F&O on the Internal Events PRA results is judged very small. Since no fire consequentially causes a Medium LOCA event, there is no effect of this F&O on NFPA-805 change evaluations (i.e., the same contribution occurs in both the before and after results).
TH-02	Modular Accident Analysis Program (MAAP) runs evaluating containment overpressure timing for large LOCA obtained results that seemed overly conservative. The success criteria documentation would be improved by providing hard copies of some additional output (e.g., plots) of plant specific analyses (MAAP runs, etc.); this would also improve the ability to evaluate not only the correctness of the conclusion, but also the reasonableness of the overall results. (Significance Level C)	Open	This issue relates specifically to the Internal Events PRA model. Since no fire consequentially causes a Large LOCA event, there is no effect of this F&O on NFPA-805 change evaluations (i.e., the same contribution occurs in both the before and after results).
TH-03	There appears to be an inconsistency between the current event trees and the success criteria notebook text. (Significance Level D)	Open	This is a documentation issue that has no numerical impact on the Internal Events PRA model. This issue does not affect NFPA-805 change evaluations.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
TH-04	This is a suggestion for making the bases for Heating Ventilation Air Conditioning (HVAC) dependency modeling decisions clearer and more traceable. (Significance Level C)	Open	The fire PRA has performed separate evaluations for room heat-up and need for HVAC. This issue does not affect NFPA-805 change evaluations.
TH-05	The Containment Equalization (CEQ) fans are not included in the hydrogen control evaluation for LERF estimation. (Significance Level C)	Open	The numerical impact of this F&O on the Internal Events PRA results is judged very small, since the overall failure probability of both trains of the CEQ fans is ~5E-4 and would increase the LERF conditional probabilities by less than 1% for non-SBO and non-bypass scenarios. For fire-induced scenarios, the possibility of consequential failure increases the CEQ fan failure probability. Assuming that at least one CEQ fan train is available following any fire initiator, the conditional LERF probability would increase by ~0.01, or which is roughly 10% to 20%. Since fire initiators do not consequentially cause SBO or containment bypass scenarios, this increase in fire-related LERF is small relative to the overall LERF value. As a result, the effect of this F&O should not significantly affect NFPA-805 change evaluations.
TH-06	The basic success criteria based on MAAP analyses were developed in the 1991/1992 time frame. (Significance Level B)	Closed	The disposition for the Internal Events PRA model brought the affected Supporting Requirement up to at least Capability Category II.

Attachment U - Table U-1 Internal Events PRA Peer Review – Facts and Observations (F&Os)

F&O#	F&O Summary	Status	F&O Disposition for NFPA 805
TH-08	Unable to establish basis for the time available to actuate bleed and feed for transients without steam conversion. (Significance Level C)	Closed	The success criteria verification notebook explicitly states that the scenarios analyzed for feed and bleed timing represented a loss of main feedwater at the sequence initiation. The event timing provided in this notebook shows that the feed and bleed HRA is based on a very conservative time estimate for transients without steam conversion. The success criteria verification notebook was prepared subsequent to the HRA to which the F&O refers. This discussion shows that the F&O has no effect on the Internal Events PRA model, although the referenced HRA modeling is conservative. This issue does not affect NFPA-805 change evaluations.
TH-09	There is a reference in the Event Tree notebook to NUREG-1335, and consideration should be given to changing this to a more current reference such as RG 1.174. (Significance Level C)	Open	This is a documentation issue that has no numerical impact on the Internal Events PRA model. This issue does not affect NFPA-805 change evaluations.

V. Fire PRA Quality

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I&M considers that the CNP Fire PRA is adequate to support the NFPA 805 Licensing Basis. A Peer Review was conducted during the period of October 12-16, 2009. The Peer Review noted a number of findings and observations (F&Os). The PWR Owner's Group issued a report containing the results of the CNP Fire PRA Review on July 20, 2010 (LTR-RAM-II-10-041). The F&Os (as written by the PWR Owner's Group) and the CNP disposition of the F&Os are provided in Table V-1. The CNP Fire PRA meets Capability Category II in most but not all cases. A limited number of ASME/ANS areas were identified by the peer review team as meeting Category I only requirements. The capability categories are defined in ASME/ANS RA-Sa-2009, "Addenda to ASME/ANS RA-S-2008 Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications". These are listed in Table V-2 with the planned disposition. The impact of those areas where only the Capability Category I requirement was met was evaluated in Table V-2. The Peer Review Report will be available to NRC staff upon request.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
PP-B2-1	Plant Partitioning - Fire Coatings	Closed	Attachment 2 of the Plant Boundary Definition and Partitioning Report indicates credit given for an Appendix R partitioning feature between AA2/AA16. The boundary consists of steel plates coated with 2-inch Pyrocrete and a technical evaluation was performed to evaluate deviations to the 3-hour rating of the fireproofing material. Since fire coatings are typically not rated for direct flame impingement, Pyrocrete could not be installed on some portions, and small through-barrier openings exist, it is not clear from the documentation that this boundary meets this requirement. Basis for Significance: Documentation enhancement	Documentation has been enhanced to demonstrate acceptability of fire coatings credited for fire barriers. For this particular example, Engineering Equivalency Evaluation 11.39, which gives reasonable assurance that the boundary is acceptable, has been referenced in the CNP Plant Boundary Definition and Partitioning Report.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
PP-B2-2	Plant Partitioning - Documentation	Closed	In page 25 of Plant Boundary Definition and Partitioning Report Rev.1, (R1900-004-001), boundary identification AA2/AA2C has eight undampered ventilation penetrations between fire zones 110 and 114, & between 111 and 115. But this is not supported by a technical evaluation. Subsequent to the identification of this issue, the plant personnel generated a technical evaluation to address this issue. Therefore, this F&O now is a documentation issue. The technical evaluation needs to be referred to in the plant partitioning report. Basis for Significance: Documentation issue only, does not impact results.	The CNP Plant Boundary Definition and Partitioning Report has been updated to reference Engineering Equivalency Evaluation 11.56.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
PP-B5-1	Plant Partitioning - Active Fire Barriers	Closed	Capability Category I of PP-B5 precludes crediting active fire barrier elements outside of those included in the regulatory fire protection program. The CNP PRA meets this requirement. Category II/III of PP-B5 requires explicit bases and criteria when crediting active fire barrier elements. No explicit basis or criterion has been developed for normally open fire doors with fusible links, beyond meeting the specific design codes required by the fire protection program. Basis for Significance: Specific recommendations to meet CC-II/III	A review of credited active fire barrier elements (fire dampers, held-open fire doors, water curtains) was expanded beyond the requirements of specific design codes, by identifying hazards at CNP that affect these elements, such as high energy arcing faults (HEAFs), as well as hydrogen and transformer explosions. These hazards were evaluated to determine their impact on active fire barrier elements in order to demonstrate compliance with Category II/III criteria. The methodology and results of the review are documented in the CNP Plant Boundary Definition and Partitioning Report.
PP-B7-1	Plant Partitioning - Walkdown Notes	Closed	Walkdown notes collected for confirming conditions and characteristics of credited partitioning elements are not referenced in the CNP Plant Boundary Definition and Partitioning Report. Basis for Significance: Documentation enhancement	A reference to the confirmatory walkdown notes has been added to the CNP Plant Boundary Definition and Partitioning Report.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
PP-C2-1	Plant Partitioning - Bases for Exclusion	Closed	Exclusion of buildings within the licensee-controlled area from the global analysis boundary is documented and appears to be reasonable; however, more detailed documentation is recommended. Basis for Significance: Documentation issue	The CNP Plant Boundary Definition and Partitioning Report has been updated to include more detailed bases for excluded buildings. In addition, drawings have been added to enhance graphical illustration of excluded locations.
ES-A1-1	Fire-induced initiating event documentation	Closed	SR ES-A1 has specific definitions of which fire initiating events need to be included, defined in terms of initiators that cause automatic scrams, manual scrams per procedure, or LCO shutdowns under certain conditions. The Fire PRA Component Selection report (PRA-FIRE-17663-0002) simply references the internal events PRA initiating events analysis, without saying how (or even if) the criteria used there to identify internal initiators are consistent with Fire PRA SR ES-A1. Basis for Significance: If the internal events PRA initiating events analysis satisfies the requirements for HL-IE-A, then it should be consistent with Fire PRA SR ES-A1.	The description provided in the CNP Fire PRA Component Selection report (calculation PRA-FIRE-17663-002-LAR), Section 3.4.1, has been updated to show how the internal events PRA initiating event analysis meets the requirements of the combined PRA Standard SR ES-A1 (Chapter 4, Fire).

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
ES-B1-1	Sensitivity of Excluded Systems	Closed	Internal events systems were excluded from inclusion in the FPRA model based on sensitivity results generated from a scoping fire PRA (17663-002 calculation, Table 3.4.2-1). This sensitivity has not yet been repeated with the full scope fire PRA. Basis for Significance: Confirmation of conclusions produced from initial scoping sensitivity	The sensitivity studies performed at the start of the fire PRA were performed again just prior to submittal of this LAR using the new full scope fire PRA. These sensitivity studies are documented in the Uncertainty/Sensitivity calculation (PRA-FIRE-17663-015-LAR) and were performed to confirm conclusions produced from the scoping fire PRA.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
ES-B2-1	MSO Modeling Review and Refinement	Closed	MSO scenarios were generally well defined, but there were three issues identified: 1. Loss of the running charging pump on spurious closure of one of two VCT outlet valves is identified as a fire-induced spurious failure for loss of RCP seal injection. However, the failed status of the pump is not transferred to the HHI fault tree if the scenario results in RCP Seal LOCA. 2. Failure to trip the RCPs is modeled for impact on RCP seal leakage following loss of RCP seal cooling. However, it does not appear that spurious re-start of the RCPs was considered. 3. Spurious closure of both the charging pump discharge valve (QRV-251) and the miniflow valve on the running pump (QMO-225 or QMO-226) could result in pump failure. This is identified as PWR generic scenario 51 in NEI 00-01, Rev. 2, Appendix G, but does not seem to have been addressed in the Cook MSO Expert Panel. Basis for Significance: The identified issues are not expected to significantly affect the results because of the availability of four pumps to fulfill the HHI function and the expectation that the cables associated with spurious re-start of	The three specific issues noted in the fire PRA peer review Finding were addressed with fault tree changes, and are documented in the Fire-Induced Risk Model calculation (PRA-FIRE-17663-05-LAR). Additionally, two general issues associated with this Finding were addressed. The first was to review the Fire PRA modeling to ensure that equipment failures leading to consequential events such as Loss of RCP Seal Cooling and Loss of Offsite Power were properly reflected in the fault trees of the CNP fire-induced risk model. The second general issue was to review the current industry guidance from NEI regarding identification of MSO scenarios, specifically to ensure that subtle variations between scenarios have been covered in the CNP fire PRA. The CNP MSO Expert Panel report (calculation PRA-FIRE-17663-002-LAR), has been updated to reflect this review.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
			the RCPs are also associated with failure to trip. However, this is identified as a finding because it could not be determined if additional cases of the same issues exist that could be more significant.	

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
ES-D1-1	Component Selection documentation refinements	Closed	While documentation in Calculation 17663-002 was sufficient to support peer review, the following minor issues were identified: 1. Treatment of interlocks and power supplies is not specifically mentioned in 17663-002. For MOVs and pumps, these appear to have been treated as within the primary component boundary and picked up in the cable selection. 2. Tables C-1 and C-2 list the applicable WinNUPRA basic event name is entered as "see 1-RCP-ALL" or "see 2-RCP-ALL." The fault tree models incorporate discrete basic events for each RCP breaker (e.g., 1ABCB----- 1B9FAF, 1AACB-----1C2FAF). 3. Tables C-1 and C-2 do not contain disposition remarks for 1-XSO-315, 1-XSO-325, 2-XSO-315, and 2-XSO-325. These dispositions were found in the UNIT-1-2-SSEL+PRA COMPS.xls file provided during the review. 4. The correlation between HEPs identified in Table 3.4.5-1 and the instrumentation listed in Table 3.4.5-2 could be improved. As currently formatted, it is hard to determine which instruments were added to support each HEP. 5. The process described in 17663-002 for identification of components to address multiple spurious operation	The updated CNP fire PRA Component Selection report (calculation PRA-FIRE-17663-002-LAR) was reviewed to ensure it reflects changes that were made during updates to related fire PRA tasks such as development of the Plant Response Model (calculation PRA-FIRE-17663-005-LAR), the multiple spurious operation expert panel, and detailed HRA (calculation PRA-FIRE-17663-012-LAR). Additionally, a description of the treatment of interlocks and power supplies considered within the boundary of the primary component was added to The updated CNP fire PRA Component Selection report (calculation PRA-FIRE-17663-002-LAR).

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
			concerns does not match the expert panel process used. There is also no reference to the Multiple Spurious Operations Expert Panel Final Report. Basis for Significance: These issues do not affect the analysis results.	
CS-A2-1	MSO	Closed	New MSO scenarios produced from an update of the MSO Expert Panel have not yet been incorporated into the cable selection analysis. Basis for Significance: Potentially significant impact to the FPRA risk profile.	The update to the MSO Expert panel has been incorporated in the detailed circuit analysis task effort/evaluation. The evaluation addresses multiple cable failure mode to support the new MSO scenario, and also addresses multiple concurrent cable failures.
CS-A9-1	Cable Selection Methodology documentation	Closed	No specific discussion is provided in the Fire PRA Cable Selection/Cable Routing report about how proper polarity hot shorts on ungrounded DC circuits are considered by the model. Basis for Significance: Documentation enhancement	Fire PRA Cable Selection and routing tasks are performed using guidelines from NEI 00-01, NUREG 6850 and a procedure developed to provide specific guidelines in performing these tasks, the procedure developed discusses how proper polarity hot shorts on ungrounded DC circuits are considered in the model. Additional to the guidelines in these references, the detailed circuit analysis evaluation also discusses the proper polarity on ungrounded DC circuits.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
CS-B1-1	Associated circuit when performing cable selection	Open	Any additional circuits and cables associated with the identified potential associated circuit's issues have not been identified. Basis for Significance: FPRA plant response model does not address associated circuits issues	Technical Evaluation 12.5 identifies power supplies that could have a potential associated circuits issues (common power supply and common enclosure). These power supplied are being addressed under new technical evaluation to show that they will not have potential associated circuits issues.
CS-C1-1	Cable Selection Documentation Enhancement	Closed	The Fire PRA Cable Selection/Location provides a table of location data on a cable-by-cable basis. To facilitate the understanding of fire impacts on a compartment basis, consider adding a table of compartment-by-compartment cable locations. Basis for Significance: Documentation enhancement	Technical Evaluation R1900-0043-0001 - "Fire PRA Cable Selection and Routing" has been updated to show the cable compartment location(s) for cables.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
CS-C3-1	Uncertainty Documentation for Cable Selection	Closed	Section 4.0, Uncertainty, of R1900-004-003 R0 Fire PRA Cable Selection/Location identifies issues on the routing of trays and conduits due to drawing legibility issues. In some cases previous drawing revisions were available to review and provided insight, if not positive identification. For the remaining cases, the engineer assigned to the routing task applied their judgment in assigning a fire zone location to the cable. This engineering judgment was based on the last known raceway or conduit location positively identified on a layout drawing. Basis for Significance: The discussion in Section 4.0, Uncertainty, implies that the routing of some population of trays and conduits could not be verified; however, discussion with those responsible for determination of the routings expressed a high level of confidence in the accuracy of the routings determined.	There were no instances where the engineer(s) routing a cable were not able to determine any fire zone for the cable's raceways, i.e. there were no instances where the engineers used an engineering judgment in the entire cable route. In cases where the engineer preparing the cable route or the engineer reviewing the route applied judgment it was discussed with CNP design personnel to verify the required fire zone information.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
CS-C4-1	Associated circuit when performing cable selection	Open	Circuits/cable related to associated circuits concerns have not been included in the Associated Circuits by Common Power Supply and by Common Enclosure, Rev. 0 report. Also, no reference is provided to this report from the Fire PRA Cable Selection/Location document. Basis for Significance: Documentation enhancement	Technical Evaluation 12.5 identifies power supplies that could have a potential associated circuits issues (common power supply and common enclosure). These power supplied are being addressed under new technical evaluation to show that they will not have potential associated circuits issues.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
CS-A11-1	Cable Selection Uncertainty	Closed	Section 4.0, Uncertainty, of R1900-004-003 R0 Fire PRA Cable Selection/Location identifies issues on the routing of trays and conduits due to drawing legibility issues. In some cases, previous drawing revisions were available to review and provided insight, if not positive identification. For the remaining cases, the engineer assigned to the routing task applied his judgment in assigning a fire zone location to the cable. This engineering judgment was based on the last known raceway or conduit location positively identified on a layout drawing. Basis for Significance: The discussion in Section 4.0, Uncertainty, implies that the routing of some population of trays and conduits could not be verified; however, discussion with those responsible for determination of the routings expressed a high level of confidence in the accuracy of the routings determined.	There were no instances where the engineer(s) routing a cable were not able to determine any fire zone for the cable's raceways, i.e. there were no instances where the engineers used an engineering judgment in the entire cable route. In cases where the engineer preparing the cable route or the engineer reviewing the route applied judgment it was discussed with CNP design personnel to verify the required fire zone information.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
PRM-B2-1	VERIFY peer review exceptions and deficiencies	Closed	Specific open F&Os from the 2001 peer review were identified that are judged to potentially impact the FPRA plant response model: 1) Observation TH-5 (Sub-Element TH-4) - CEQ fans are excluded from the hydrogen control evaluation for LERF estimation with no clear basis. 2) Observation SY-17 (Sub-element SY-17) - Cross-tie for AFW from Unit 2 does not consider the need for AFW at Unit 2 (e.g., prior or concurrent trip of the opposite unit), and 3) No apparent documented basis for sufficient bottles air supply inventory for PORV operation for the 24-hour mission time. Basis for Significance: Potential impact to the FPRA risk profile	The internal events PRA has developed and documented resolutions for the C-level F&Os that could adversely affect the development of the Fire PRA plant response model. Resolution of SY-17 addresses all credited cross-ties. This review has been documented in calculation file PRA-FIRE-17663-005-LAR.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
PRM-B9-1	Perform the systems analysis of Fire PRA model	Closed	A review of calculation 17663-0005 Appendix B1, Table B-1 revealed that some items noted as included in fault tree modifications were not, in fact, incorporated. These include: 1. For valves 1-IMO-262 and 263, it is stated in the "How component is included in FPRA" column that basic events 1FAMV--IMO262CSF and 1FAMV--IMO263CSF were added to the 1HPI fault tree. The MSO Expert Panel Report noted that "Spurious opening/ or closing of minimum flow recirc lines for AFW, SI, CHP, RHR is modeled in fire PRA as in the internal events PRA, with the same success criteria." Spurious closure of these valves was modeled in the internal events PRA because control power is removed from the valves by a switch in the control room. However, it is possible that a fire-induced circuit failure could result in a hot short bypassing this switch. Spurious closure of these valves in combination with spurious start of the associated SI pump could result in pump failure if RCS pressure is high. 2. For 1-TCSE, it is stated in the "How component is included in FPRA" column says "added CFF failure to 1T11A and 1T11D where appropriate." However, these events were not added to the applicable	The fire-induced risk model was reviewed. Calculation PRA-FIRE-17663-005-LAR was updated to ensure that the changes identified were correctly incorporated into the FPRA and adequate justifications were developed for any fire-induced impacts that were not modeled. Also, the FPRA development team reviewed the FPRA to ensure that MSO Expert Panel was properly modeled and the modeling is consistent with that in the internal events PRA.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
			fault trees. The justification for not including the cooling fan failures was that the fans have an alternate power supply from the supported transformer. Therefore, the cooling is considered within the transformer boundary. Basis for Significance: Omission of failure modes identified in the equipment selection and MSO expert panel without adequate justification may impact the results. Although the identified items are not expected to significantly impact the results, there may be additional items not identified by the review team that could be significant.	

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
PRM-C1-1	Document the Fire PRA plant response model	Closed	Several documentation issues were identified in Calculation 17663-0005: 1. In Table B-1 the basic event IDs associated with component 12-CRV-51 is given as 1D0AV-12CRV51OSF. It appears that the correct ID should be 0D0AV-12CRV51OSF. 2. In Table B-1, the remarks for component 1-QCM-250 note that "per RCB event no longer considered to fail TBC." The review team was told that this disposition has been formally documented. The remarks should be updated to provide this more formal reference. 3. In Table B-2 the basic event associated with component 12-CRV-51 is given as 2A0CB----21BDCSF. It appears that the correct ID should be 0D0AV-12CRV51OSF. 4. Appendix A Tables 4-2, 4-4, and 4-8 lists the mission time for Bleed and Feed as 0.5 hours. It appears that the systems to support Bleed and Feed are modeled for 24 hours and that this is the correct mission time. If 0.5 hours is considered the correct mission time, the basis needs to be provided. 5. The list of items included in the small LOCA initiator in Appendix A Section 4.2.1 includes "RCP seal LOCA caused by failure of RCP cooling without reactor trip."	The fire PRA development team corrected the identified documentation issues and reviewed Tables B-1 and B-2 to ensure that the modeling notes reflect the current fire PRA resolution. The fire PRA plant response model is documented in calculation file PRA-FIRE-17663-005-LAR.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
			This is not listed in Section 4.2.3 in the top event description for Small LOCA. 6. The description of top event SBO in Appendix A Section 4.1.4 discusses the fact that availability of the turbine-driven auxiliary feedwater pump impacts the time to perform manual cross-ties. However, it is not clear from the wording that the turbine-driven AFW pump and cross-ties are modeled within the SBO fault tree. 7. Calculation 17663-0005 Appendix A Section 4.1.4 says in the description of top event RCP-1 that the "Westinghouse seal LOCA model identifies three distinct seal LOCA sizes, 21 gpm/pump, 182 gpm/pump, and 480 gpm/pump." WCAP-16141 actually identifies four seal leakage rates of 21 gpm/pump, 76 gpm/pump, 182 gpm/pump, and 480 gpm/pump. It appears that the probability of the 76 gpm/pump leakage rate (.01) has been combined with the 21 gpm/pump leakage probability. Since there is no difference in the mitigation requirements for all leakage rates between 21 gpm/pump and 182 gpm/pump, this is considered to be only a documentation issue. Basis for Significance: The modeling for all of the identified items appears	

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
			to be correct. Therefore, these issues are not expected to affect the results.	
PRM-B11-1	MODEL all operator actions and operator influences	Closed	No comprehensive review has been made of all sequence-specific internal events HEPs to see whether these variations need to be reflected in the FPRA model. Basis for Significance: No significant impact to risk profile is anticipated. This is judged to be primarily a documentation issue.	A comprehensive review was conducted to identify sequence-specific internal events human failure events and has been documented in calculation file PRA-FIRE-17663-012-LAR (HRA).

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
FSS-A2-1	Multiple Concurrent Cable Failures	Open	The assessed capability category for this item is "Not Met". The methodology that is described indicates that all cables whose fire-induced failure could adversely affect a credited component are identified. This is true for both functional failure concerns as well as spurious actuation (operation) concerns. The issue arises due to the process that is used whereby the spurious threats are propagated into the Fire PRA. The process as implemented results in spurious events being evaluated based on a single cable failure. Instances where the concurrent failure of more than one cable is required are not currently addressed in the Fire PRA. This includes instances where the set of cables co-exist in the same raceway. The treatment of this SR is closely related to CS-A02. In order to meet FSS-A2, the propagation of the failure combinations must be consistent. The treatment needs to include in the grouping of risk-relevant targets the cables supporting any identified circuits where hot shorts impacting up to and including two cables (including both intracable and intercable hot shorts) could lead to spurious operation of selected equipment.	The treatment of fire induced spurious equipment operations was upgraded to address the potential cases where multiple concurrent cable failures could occur and cause undesired equipment operations.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
			Basis for Significance: A review of the information provided in Table 3-6 of FIRE-PRA-17663-0010 coupled with discussions with the utility team concluded that the determination of whether a spurious event occurs relies on the entry in columns for those events. Unfortunately, there are other instances where the concurrent failure of multiple cables is required to cause the upset state. These instances are identified via a discussion in another column in the table. Consequently, these discussions were not considered in the development of the damage set and therefore, the damage set effectively is limited to only those spurious events that result from a single cable failure. Higher order cable failures are implicitly treated as not being credible. Examples include 1-CMO-419, 1-CMO-429, 1-ICM-305, and 1-ICM-306. It is anticipated that additional cases may arise as a result of the update of the related report to incorporate changes as noted in other F&Os (MSO Expert Panel).	

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
FSS-A2-2	Fire Quantification of Individual Areas	Closed	PRA-FIRE-17663-0011a, CNP Fire PRA detailed Fire Quantification of Individual Areas. The report identifies those scenarios where burnup was acceptable and, where not acceptable, and it provides a correlation to the Detailed Fire Models conducted as part of Task 4.11. As a sample, Fire Modeling Report AA3, (R1900-003-AA3), was reviewed to verify the correlation. There was a good correlation between the two, except for an instance where Fire Zones were listed as acceptable with full room burnup and with detailed scenarios conducted. Basis for Significance: This appears to be a minor issue since the CCDP and CDF values were identical between the burnup and fire modeling scenarios.	The correlation between two documents "PRA-FIRE-17663-0011a, CNP Fire PRA detailed Fire Quantification of Individual Areas" and "Task 4.11, Detailed Fire Models" was established for the few discrepancies and review conducted for other detailed fire models to ensure that this is an anomaly.
FSS-A6-1	MCR Fire Scenario Completion	Closed	Fire Scenarios for the Unit 2 MCR are not complete. Basis for Significance: Methodology is established. However, specific risk for Unit 2 MCR is not identified.	The Unit 2 MCR fire quantification was completed using the methodology used for Unit 1. This is described in calculation PRA-FIRE-17663-0010b-LAR.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
FSS-A6-2	Fire PRA treatment of the Main Control Room	Closed	The Fire PRA treatment of the Main Control Room basically divides the analysis into a limited number of cases. In general, there are two specific considerations that do not appear to have been specifically included or addressed. One involves a postulated fire in the panel section that contains the Main Control Room ventilation system controls. The analysis of this panel section does not address the consequential failure of the ventilation system. The treatment applies a node probability of 0.10 for the random failure of the system. The other consideration that does not appear to have been addressed is whether the postulated progression of the fire event at a particular panel section would result in an event progression that could not be mitigated using features and controls available via OHP-4025-001. The current treatment assumes that a screening HEP of 0.10 can be applied to all abandonment cases. The potential that a fire at a panel could put the plant into a configuration that would require functions and controls not available via OHP-4025 should be evaluated using an HEP of 1.0. Basis for Significance: A cursory	The MCR analysis was revised, and the two cases identified during the peer review were evaluated. The results were incorporated into calculation file PRA-FIRE-17663-011b-LAR.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
			review of the MCR results indicates that incorporation of the issues noted herein would not results in a significant impact to the quantification totals for the MCR.	

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
FSS-C2-1	Transient and oil fire durations	Closed	In order to meet CII/III, CHARACTERIZE ignition source intensity using a realistic time-dependent fire growth profile (i.e., a time-dependent heat release rate) for significant contributors as appropriate to the ignition source. There is an inconsistency in the time to reach peak HRR for transient fires (6 minutes per the procedure vs. 8 minutes per the modeling reports). There is also insufficient justification for the duration of both transient and unconfined oil spill fires. Basis for Significance: There is an inconsistency in the identification of duration to reach peak HRR for transient fires in EPM-DP-FP-001 R1 (6 minutes) and the detailed fire modeling reports (8 minutes). Eight minute duration is consistent with FAQ 08-0052. The 40-minute transient fire duration for transient fires in the detailed modeling reports has not been justified relative to the up to 60-minute duration in FAQ 08-0052. The duration of unconfined oil spill fires (20 minutes) in the detailed fire modeling reports is very conservative when compared against typical durations from NUREG 1805 spreadsheet applications.	The Detailed Fire Modeling Procedure, EPM-DP-FP-001, has been updated to reflect the correct duration used to reach peak HRR for transient fires. Transient fires were extended to 60 minutes per FAQ-0052. The duration of unconfined oil fires, while conservative, did not result in any oil fire scenario becoming a significant risk contributor, and therefore, no changes were made.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
FSS-C5-1	Damage Thresholds	Closed	Damage thresholds are based on thermoset cable thresholds. It is known that thermoplastic cables are installed, and the impact is being reviewed. Also, solid state components are documented in the detailed fire modeling reports at the higher thermoset damage thresholds. Basis for Significance: Use of a higher damage threshold can result in misidentification of failures. However, the issues are understood and being pursued. In the case of solid-state components, NUREG 1805 spreadsheets (FTDs) have been run to determine if damage does occur at the lower thresholds.	The Fire PRA has been updated and revised to include impact of thermoplastic cable installations and to address solid-state components.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
FSS-C8-1	Credited Wraps	Closed	FSS-C08 requires confirmation that credited wraps are not subject to mechanical damage or direct flame impingement from high hazard sources (unless qualified or tested under these conditions). Basis for Significance: The detailed fire modeling report for AA36/42 indicates that two credited raceway wraps are not expected to be subject to mechanical damage or flame impingement from high hazards sources, inclusive of HEAF. Walkdown data has not been located to confirm lack of damage or impact. Should such damage or impact occur, the cables protected within the raceways could be subject to the environment of postulated fire scenarios in the location.	Technical Evaluation 11.57 has been updated to provide objective evidence that credited wraps are not subject to damage from high hazard sources.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
FSS-D4-1	Cable Tray Covers	Closed	Detailed fire modeling inputs for cable trays which have tray covers credit a 20-minute delay for damage and ignition. During walkdowns small holes were noted in some trays bottoms which had been credited with the 20-minute delay. The impact of the tray bottom design with these holes should be evaluated and documented. Basis for Significance: Delays in ignition and damage times could be overestimated.	The Fire PRA has been updated and revised to remove credit for cable tray covers in locations where cable tray bottoms have small open holes.
FSS-D7-1	Fire Protection System Unavailability	Closed	CNP fire detection and suppression analysis has been completed using the approach and guidance of NUREG/CR-6850 Appendix P. Plant-specific values for "unavailability" have been estimated and an evaluation for outlier behavior based on plant information from maintenance activities is being conducted and tracked via a project open item. This evaluation needs to be completed and documented to achieve a CC II rating. Basis for Significance: Meets Category I	Cat 1 is acceptable for the application. CNP considers the estimates of unavailability used in the analysis to be appropriate.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
FSS-D8-1	Fire Protection System Effectiveness	Closed	The detailed fire modeling reports, in which detection and suppression is credited, should be updated to include a specific section addressing system effectiveness. Currently some data is included in Section 5.2, some is in Attachment 1 and some is in Attachment 9. NFPA Code evaluations are complete but not specifically referenced. Basis for Significance: Enhancements	A discussion of fire protection system effectiveness has been incorporated into all fire modeling reports.
FSS-E3-1	Parameter Estimates/Uncertainty	Closed	A sentence in Section 3.3.4.2 of Scientech report PRA-FIRE-17663-0015 stops mid-sentence: "Results of sensitivity studies will be documented in" Basis for Significance: This editorial error should be fixed.	Section 3.3.4.2 of Scientech report PRA-FIRE-17663-0015-LAR was updated to state the location of the results of the sensitivity studies.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
FSS-G1-1	Multi-Compartment Analysis Documentation	Closed	Table 3 of Scientech calculation file 17663-011c, Multi-Compartment Analysis, identifies adjacent areas that did not screen at Steps 1, 2 or 3 at a CDF of 1E-7 or less. The non screened areas are supposed to go onto the next stage. Area AA2 to AA25 has an identified CDF of 1.30E-7 in Table 3, which exceed 1.0E-7. However, these are not addressed in the subsequent stage. Basis for Significance: The significance of this multi-compartment is low given that Table 3 identifies the CDF of this MCA as 1.30E-7. All other MCAs in Table 3 did progress to the next stage. This appears to be a single instance of incomplete documentation of the results of the next stage.	The Multi-Compartment Analysis for Areas AA2 to AA25 with CDF 1.30e-7 was addressed in the subsequent stages of the Screening, with the final results provided in a table on page 36 of 56.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
FSS-G2-1	Multicompartment Analysis - Fire Zone Barriers	Closed	DEFINE screening criteria for multicompartment fire scenarios that provide reasonable assurance that the contribution of the screened physical analysis unit combinations are of low risk significance. The screening criterion, when based on a fire zone to fire zone analysis, is predicated on the results within each zone, and not necessarily fire spread between zones, especially when barriers between zones are credited. Basis for Significance: When a fire scenario was limited to a zone-basis, the approach was to field-verify the ability of the barriers to contain the fire. Appendix A fire barriers, which have been incorporated into the fire protection program as Appendix R barriers, form the zone boundaries. The approach is not clearly documented.	For any zone where "whole room burnout" was employed rather than "detailed fire modeling" a discussion of the fire barriers was provided to justify that a fire can be expected to be contained within the single fire zone.
FSS-G6-1	Multicompartment Quantification	Closed	In order to meet CII/III, it is necessary to quantify the risk contribution of any selected multicompartment fire scenarios consistent with FQ requirements. Basis for Significance: The SR is met. The F&O only provides guidance for meeting CC-II/III.	All the Table 5 MCAs were quantified for the risk contribution of any selected multicompartment fire scenarios consistent with FQ requirements.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
IGN-A7-1	Storage Factors	Closed	Observation: Calculation 17663-0006 in section 3.4.7.2 assigns a storage weighting factor of 0.1 for plant areas where no storage locations are to be applied and a maintenance weighting factor of 0.05 for plant areas where hot work will be prohibited at power. It is recognized that establishing enhanced administrative controls will reduce the likelihood for the storage of transient materials or hot work in these areas. However, the specific bases for the reductions used are not documented in a manor that related to CNP specific plant experience. Basis for Significance: Impacts robustness of the update process. Bases should be known so this assumption can be included in some type of monitoring program to ensure changes to plant operating experience specific to hot work and transient combustible controls are evaluated.	The bases for 0.1 storage and 0.05 maintenance weighting factors were added as they relate to CNP operating experience to section 3.4.7.2 of calculation file PRA-FIRE-17663-006-LAR.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
IGN-A7-2	Hot Work Factors	Closed	For plant areas where hot work is to be prohibited during power operations, a maintenance weighting factor of 0.05 was assigned. Administrative controls would reduce the probability of the transient hot-work-related bins. However, the reduction has also been applied to Bins 7, 25, and 37 which are maintenance related transients. Therefore the reduction would not apply. Basis for Significance: Transient-related ignition frequencies are too low for the affected plant areas.	Plant area specific maintenance factors were assigned for bins 7, 25, and 37 as described in calculation file PRA-FIRE-17663-006-LAR.
IGN-A7-3	Fire Influence Weighting Factors	Closed	Fire Influence weighting factor of "0" is assigned to outside compartments Unit 1 Yard, Unit 2 Yard, and 146 while assessing that transient fires will not impact risk important equipment or circuits. However, the basis for this treatment is not explicitly provided in the calculation. Transient fires are possible in these outside areas and are not precluded by design. Basis for Significance: The transient fire risk in the affected compartments may be underestimated.	Weighting factors were assigned following the guidance of Table 3-5 of PRA-FIRE-17663-006-LAR for affected compartments and spatial separation to subdivide the yard was applied.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
IGN-A7-4	Exclusion of Bins 13, 17, and 29	Closed	Bins 13, 17, and 29 were excluded from consideration at CNP. The bases for exclusion should be added to the bin descriptions in 17663-006 Section 3.4.6. Basis for Significance: No impact to risk results.	The bases for exclusion to the bin descriptions has been added, and described in calculation PRA-FIRE-17663-006-LAR.
IGN-A7-5	Hydrogen Bins	Closed	Bin 19 was excluded from consideration at CNP. During a plant walkdown of zones 110 and 111, H2 in 15% concentration cylinders with piping attached to a plant system was observed. These should be addressed in bin 19 or the bases for exclusion should be added to the bin description in 17663-006 Section 3.4.6. Basis for Significance: Low level risk impact	Hydrogen systems in fire zones 110 and 111 were evaluated and their treatment documented in calculation PRA-FIRE-17663-006-LAR.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
IGN-B1-1	Document all frequencies and event data	Closed	The following issues were noted in Calculation 17663-0006 document: 1) FAQ Table 2-1 does not reflect current status and should be updated to reflect all FAQ's are approved. 2) The spread sheets for Attachments A and B were not attached. 3) Page 18 discussion of weighting factors states the low category is used for no hot work locations when a plant-specific 0.05 value was actually used. This is inconsistent with the page 16 discussion. 4) Numerous locations in the calculation contained an error message relating to a reference; example: pg 11. 5) Bin 10 discussion "They are" should be "They are", 6) Section 3.4.7.2 under transients "hto" should be "hot", Basis for Significance: Does not impact risk results.	Editorial issues as needed were corrected in calculation PRA-FIRE-17663-006-LAR.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
IGN-B1-2	Document all frequencies and event data	Closed	Calculation 10766-0006 contains numerous assumptions such as the 5 located at the end of Attachment B spreadsheet that are not included as assumptions in Section 3.2. If these are not located in the "assumptions" section, they could be missed in the consideration of uncertainty analysis. Basis for Significance: No direct risk impact	Calculation for embedded assumptions was reviewed and added to Section 3.2 in calculation PRA-FIRE-17663-006-LAR.
CF-A1-1	Circuit Failure Probabilities	Closed	The appropriate industry-wide conditional failure probabilities for fire-induced circuit failures have not been selected for the specific circuit configurations under consideration. Basis for Significance: Potentially significant impact to CNP FPRA risk profile	All of the circuit failure likelihood probabilities in the CNP fire PRA were reviewed and, if appropriate, updated based on data located in NUREG/CR-6850 Appendix K. Additionally, valves with double-break design were re-analyzed to develop best-estimate circuit failure likelihood probabilities accounting for this plant-specific feature. The updated circuit failure probabilities are documented in calculation PRA-FIRE-176663-010-LAR.
CF-A2-1	Hot Short Probability	Closed	Observation: Parametric uncertainties of applied hot short probabilities have not been incorporated into the model. Basis for Significance: Technical adequacy of the PRA	Appropriate error factors were applied to the hot short probabilities and were incorporated into the PRA model. The circuit failure probability error factors are documented in calculation PRA-FIRE-176663-010-LAR.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
HRA-A1-1	HFEs Failed due to Obstructed Paths	Closed	The assessed capability category for this item is "Met". The methodology that is described indicates that all credited HFEs are addressed for fire-related effects. The treatment includes consideration of cognitive and execution impacts. The treatment also includes consideration of the location of credited x-MCR actions and the location of the postulated fire events. A potential issue arises in that it is unclear whether or how the pathway for that action was addresses and resolved to have not been adversely affected. Basis for Significance: The occurrence of a large fire event could have consequential impacts related to fire brigade actions, smoke removal efforts, or other considerations could impact operator access to the location for the action.	A confirmation of the pathways has been performed and is documented in PRA-FIRE-17663-012-LAR.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
HRA-A2-1	Credit for Attachments to MCR Abandonment Procedure	Closed	This SR was assessed as Met. The SR involves the treatment of fire-specific safe shutdown actions in the Fire PRA. The treatment as described in FIREPRA-17663-0012 selectively applies the actions associated with 01/02-OHP-4025-001. However, this procedure is specific to Main Control Room Abandonment. The documentation includes a note in the operator interview discussion in Appendix B indicating that 'operators can refer to procedure for additional guidance'. However, there is no other reference, basis or justification provided. For example, it is unclear whether the 'credit' provided by the treatment is consistent with operator training, whether the operator are trained in this specific usage of the procedure, or whether that usage is consistent with procedure itself. A concern was noted in that a review of 02-OHP-4025-001 found that the usage and credit of this procedure is inconsistent with the state purpose, entry conditions, and caution provided before Step 1 of the procedure. Basis for Significance: The analysis documentation and treatment are internally consistent in the credit	Additional documentation has been provided to more clearly describe and justify the stated treatment of the MCR Abandonment procedures. This has been added to calculation PRA-FIRE-17663-012-LAR.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
			assigned to the referenced procedure. Separate discussions and procedure reviews found that the treatment was consistent with the structure of the plant procedures but much of this discussion and evidence is not referenced or discussed in the documentation. Because the treatment was valid, this SR was judged to have been met, but that additional documentation should be provided to more clearly describe and justify the stated treatment. References to training material, guidelines, or other materials should be used and referenced as applicable. As it currently exists, a notable amount of discussion was necessary to examine this attribute. For example, OHI-4023, 4.6.9.f provides clarification of the phrase 'refer to'. 1-OHP-4023-ECA-0.0, step 12 provides a clear 'refer to' to 1-OHP-4025-LS-3 which provides evidence that CNP does in fact treat elements of OHP-4025 as individual recovery actions.	

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
HRA-A3-1	Screening of Undesired Response to	Closed	This SR was assessed as Met and it involves the potential for fire-induced failures associated with instruments and alarms that could mislead operators such that they would perform an undesired action. The documents that were reviewed concluded that no undesired actions would occur. That conclusion is based in part on a statement that verification of the status is required before or after the action. A number of instances were identified wherein the action involves the tripping of a potentially critical pump (RHR, CCW, ESW, etc.). The information provided calls for the operator to trip the pump. No further discussion is provided to justify or credit a restart of the pump. As presented, it would appear that these tripping threats should have been included in the Fire PRA. Further discussions and reviews found that plant procedure OHI-4000, Section 3 includes explicit Expectations that the confirmation of the alarm condition is to occur before execution of the specific alarm response actions. The information provided in this procedure provides a much stronger basis and justification for the applied treatment and should be added to the documentation.	The documentation has been enhanced to add references to, and discussion of, OHI-4000, Section 3. This procedure provides a concise and objective statement as to the expected response of the plant operators to alarms. This has been added to calculation file PRA-FIRE-17663-012-LAR.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
			Basis for Significance: The applied treatment and evaluated response of the plant operators to possible fire induced spurious alarms currently relies on interview notes. The plant procedure structure actually includes a much stronger justification and basis for the applied treatment and references to that procedure should be added to the documentation.	

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
HRA-C1-1	HFE Cues Inconsistent with Credited Recovery	Closed	This SR was assessed as Met because only a single issue was noted. The documentation provided in FIRE-PRA-17663-0012 included a number of instances where the treatment was divided into two separate elements - one to specifically address the cognitive element and another to address the execution. An example was 1D-OPENHOORHE. This action involves only the execution of 'opening the door' for the motor driven AFW pump room. The cognitive element was addressed via ESW-20MINCOGHE. The indicated cues for this cognitive element involved only the status of the ESW pumps (trip, flow, pressure). A review of the implementation of this action found that 1D---OPENDOORHE is credited for recovery for all failure modes of the cooler itself- not just loss of the cooling water dependency. In this instance, the scope of cues is inconsistent with credited recovery. Basis for Significance: The treatment of 1D---OPENDOORHE is such that credit was provided in the Fire PRA even for cases where no valid cue is provided to the operator. The cues are based solely on the availability of	The cues associated with each human failure event included in the Fire PRA model was reviewed and confirmed, especially for those human failure events where the cognitive contribution was modeled in a separate basic event. The cues modeled in the fire PRA have been documented in calculation file PRA-FIRE-17663-012-LAR.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
			ESW to the cooler itself. A random or fire induced failure of the cooler itself would not be detected and hence the credited recovery would not be valid.	
FQ-A3-1	Quantification with Scenario-Specific Factors	Closed	The quantification does not account for all scenario-specific quantification factors. Basis for Significance: Potential impact to FPRA risk profile.	The fire PRA model has been modified to properly account for scenario-specific factors. This includes the following changes: 1) Impacts to HEPs based on equipment unavailability due to fire. For example, for fire zone 144, when the steam supply valves for the TD AFW pump spuriously close, but an HFE for the AFW cross-tie assumes the TD AFW pump is available for four hours. 2) Dual unit trip considerations have been added to account for dependency of mitigating systems needed for opposite unit (e.g. AFW or charging crosstie if both units are tripped).

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
FQ-A4-1	Quantifying the fire-induced CDF	Closed	The "state-of- knowledge" correlation between fire-specific event probabilities (e.g., suppression system unavailability, fire ignition frequencies, hot short conditional probabilities, etc.) has not yet been applied. Basis for Significance: The "state-of-knowledge" correlation has not been fully addressed, but no significant impact on parametric uncertainty evaluation is expected.	All applicable data was correlated. The initiating event basic events for "small pump fire" have a common match in the WinNUPRA prm file and "pre-action sprinkler suppression" systems have a common math in the WinNUPRA prm file.
FQ-B1-1	Perform the quantification and develop the design	Closed	Quantification truncation limits were selected based on an iterative evaluation with a preliminary fire model. This iterative evaluation is recommended to be repeated for the full scope fire PRA. Basis for Significance: Current truncation limits appear to be appropriate. No likely impact to risk profile.	Iterative calculations have been performed to ensure appropriate truncation limits. Convergence can considered sufficient when successive reductions in truncation value of one decade result in decreasing changes in CDF or LERF, and the final change is less than 5%.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
FQ-B1-2	Perform the quantification and develop the design	Closed	Observation: WinNUPRA utilizes the rare event approximation, which is not recommended when basic event probabilities are above 0.1. Basis for Significance: WinNUPRA is an industry-accepted code	The documentation of modeling uncertainties includes a note that the FPRA utilizes the rare event approximation, which introduces some conservatism into the results, and that for some applications this may be a consideration (particularly for cutsets in which several basic event probabilities are above 0.1).
FQ-C1-1	Address HRA dependencies with a defined basis	Closed	The peer review team observed that the final confirmatory step to ensure that all significant HEP combinations with potential dependencies have not been identified. Basis for Significance: Potentially significant impact on the FPRA risk profile	A confirmatory analysis has been performed to ensure all significant HEP combinations with potential dependency have been identified. The global CDF and LERF equations (the "global" equations combined together the cutsets from all significant FPRA sequences or all FPRA sequences) have been quantified with HEP values set to values that are sufficiently high so that the cutsets are not truncated. The additional HFE combinations that were identified were then evaluated and modified as appropriate to address the degree of dependency between the HFEs in the cutset or sequence.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
FQ-D1-1	Determine LERF from Fire PRA response model.	Closed	Documentation of results for significant and non-significant sequences (cutset review) has not been performed for LERF. Review of importance values has not been performed for reasonableness. F&Os generated for other FQ SRs should be applied to the LERF model, as well as the CDF model. Basis for Significance: Potential impact to quantitative results	A review of significant and non-significant LERF results was conducted. The results section of the fire PRA has been updated to provide importance values for LERF. This has been provided in calculation PRA-FIRE-17663-011-LAR.
FQ-E1-1	Document the CDF and LERF analyses	Closed	It is not apparent that any of the items listed in QU-D and LE-F, as clarified in the SR, were considered for the fire quantification - for example, review of significant and non significant cutsets, identification of key contributors to CDF and LERF, and review of importance of components and basis events. Basis for Significance: This SR requires that CDF and LERF internal events' quantification SRs be addressed for fire. This portion of the work was not completed at the time of the peer review.	The results section of the fire PRA has been updated to provide the data in the supporting requirements from the internal events portion of the combined PRA standard (Chapter 2) associated with high level requirements QU-D and LE-F for LERF. This has been provided in calculation PRA-FIRE-17663-011-LAR.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
FQ-F1-1	Quantification Table Level of Detail	Closed	The documentation of the fire quantification provides the CDF and LERF results, but not to the extent that internal events quantification would be done, e.g., tables of most significant fires, ignition sources, cutset reviews, etc. Basis for Significance: The typical types of quantification tables identified above are needed to facilitate reviews and applications.	Tables typically included for internal events quantification have been added to the report. The tables have been added to calculation PRA-FIRE-17663-011-LAR.
SF-A3-1	Assess the potential for common-cause failure	Closed	Discussions with utility indicate that there are existing strategies to cope with a complete loss of onsite fire suppression systems, e.g., city water and pumper truck capability. Basis for Significance: This SR has been met; however, the additional existing strategies discussed with the utility to cope with a complete loss of onsite fire suppression systems needs to be included in the documentation. Note that since SF is allowed to be handled qualitatively, an issue here would have no impact on any quantitative result.	Report PRA-FIRE-17663-013-LAR has been updated to include information on coping strategies.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
SF-A4-1	Review plant seismic response procedures	Closed	Scientech report PRA-FIRE-17663-0013 does not reference a "seismic response procedure" that was used to fulfill this SR. The plant's seismic response procedure was requested and provided by the utility (1-OHP-4022-001-007, Rev. 10, "Earthquake"). This procedure was reviewed in accordance with this SR. The procedure did not mention the possibility of a seismically-induced fire or spurious operation of fire suppression systems that could compromise postearthquake plant response; however, additional discussions with utility indicate that there are other existing procedures for coping with large-scale events, such as seismically-induced fires, e.g., emergency plan, fire pre-plans for beyond design basis events. The later of these provides actions to cope with a complete loss of onsite fire suppression. Basis for Significance: This SR has been met; however, the additional existing procedures discussed with the utility to cope with large-scale events needs to be included in the documentation. Note that since SF is allowed to be handled qualitatively, an issue here would	Report PRA-FIRE-17663-013-LAR has been updated to include the additional information on the plant's seismic response procedure.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
			have no impact on any quantitative result.	

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
SF-A5-1	Review the plant fire, storage of fire equipment	Closed	Scientech report PRA-FIRE-17663-0013 does not reference "fire brigade training procedures" that were used to fulfill this SR. The plant's fire brigade training procedures were requested and the FP training program description was provided by the utility (TPD-600-FP). This document was reviewed in accordance with this SR. There is no training discussed in the procedures regarding the ability/inability to fight a fire after an earthquake (either in terms of responding to fire alarms and fires, storage and placement of equipment, and access routes); however, additional discussions with the utility indicate that there is extensive training on large scale events such as those included in the fire preplans for beyond design basis events- Training activities that involve offsite fire response personnel, equipment, and water sources. Basis for Significance: This SR has been met; however, the additional existing fire-related training discussed with the utility to cope with large-scale events needs to be included in the documentation. Note that since SF is allowed to be	Report PRA-FIRE-17663-013-LAR has been updated to provide the additional information.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
			handled qualitatively, an issue here would have no impact on any quantitative result.	

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
SF-B1-1	Document the results of the seismic/fire	Closed	The documentation of the seismic/fire interaction analysis relies exclusively on the work done for the IPEEE. Several unvalidated assumptions are made in Scientech report 17633-0012 that are intended to justify that the work done for the IPEEE remains valid today. These unvalidated assumptions are: 1) All fire suppression features have been installed in accordance with a Standard and all installed equipment is maintained in accordance with a Standard, 2) CNP as no cast iron fire mains, and 3) No significant changes to the plant fire protection features have been made that would render the IPEEE assessment invalid. These assumptions are made without any validation. Therefore, the adequacy of reliance on the IPEEE seismic/fire (SF) interaction analysis is in question. The IPEEE assessment of seismic/fire interaction (circa 1992) was reviewed. It appears that the issue of having (or not having) cast iron fire mains was raised at that time and appears to have never been resolved (at least in the documentation provided to me). The IPEEE discusses future walkdowns to be performed to address this question, but later walkdowns were	Report PRA-FIRE-17663-013-LAR has been updated to validate the assumptions and fix the typographical errors.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
			silent on this issue. The plant contends that no cast iron fire mains are used, but no documentation has been provided to verify this. Scientech report PRA-FIRE 17663-0013 is misnumbered in the body of the report (it is numbered 17663-0012). Basis for Significance: The validity of the seismic/fire interaction report is dependent on three unvalidated assumptions. Note that since SF is allowed to be handled qualitatively, an issue here would have no impact on any quantitative result.	

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
UNC-A1-1	Perform the uncertainty analysis	Closed	Calculation 17663-0015, Fire PRA Uncertainty and Sensitivity Analyses, does a good job of characterizing the potential sources of uncertainty in the Fire PRA model. However, propagation of parametric uncertainty for the fire CDF and LERF to address component failure probabilities, fire ignition frequencies, detector response, and auto suppression availability has not been performed. The Standard expects that the parametric uncertainty will be propagated through the baseline PRA model independent of any planned risk-informed applications. Basis for Significance: This is a required element for meeting the supporting requirement.	I&M performed parametric uncertainty analysis of the CDF and LERF results for the risk-significant fire zones/areas, and documented this update in calculation file PRA-FIRE-17663-015-LAR.

Attachment V - Table V-1 Fire PRA Peer Review – Facts and Observations (F&Os)

F&O#	Topic	Status	Fact/Observation	Disposition
MU-B3-1	PRA Update Procedure	Closed	PRA Model Update Procedure 12-EHP-9010-PRA-001 Section 3.3 describes the process used for periodic PRA updates and Section 3.4 describes cases where an interim update may be appropriate. However, there is no explicit direction to: 1) Perform updates in a manner that maintains consistency with the supporting requirements of the ASME/ANS PRA Standard, and 2) Determine if changes to the model incorporated during a periodic or interim update meet the definition of a PRA upgrade requiring a peer review. Basis for Significance: Discussion with AEP personnel revealed that the actual practice meets the requirement even though the procedure does not explicitly require it.	Sections 3.1.1, 3.1.2, and 3.3.1 of the CNP PRA Model Update procedure were revised to ensure that updates are performed to Capability Category II of the PRA Standard, and that the PRA Supervisor will identify whether a model change is an update or an upgrade requiring follow-on peer review.

Attachment V - Table V-2 – Fire PRA–Category I Summary

SR	Topic	Resolution
PP-B3	If spatial separation is credited as a partitioning feature, JUSTIFY the judgment that spatial separation is sufficient to substantially contain the damaging effects of any fire that might be postulated in each of the fire compartments created as a result of crediting this feature.	Updates made to the Fire PRA since the peer review have incorporated spatial separation (specifically for the YD compartment) and justification for such. This SR is now considered to meet Cat II/III.
PP-B5	DEFINE AND JUSTIFY the basis and criteria applied when active fire barrier elements (such as normally open fire doors, water curtains, and fire dampers) are credited in partitioning.	Updates made to the Fire PRA in response to F&O PP-B5-01 have incorporated appropriate justification for active fire barriers and this SR is now considered to meet Cat II/III.
FSS-C3	JUSTIFY the heat release rate profile stages included in the analysis (i.e., fire growth, steady burning or decay stages).	Updates made to the Fire PRA in response to F&O FSS-C2-01 have incorporated appropriate justification for heat release rate profile stages and this SR is now considered to meet Cat II/III.
FSS-D7	In crediting fire detection and suppression systems, USE generic estimates of total system unavailability provided that : a) the credited system is installed and maintained in accordance with applicable codes and standards, b) the credited system is in a fully operable state during plant operation, and c) the system has not experienced outlier behavior relative to system unavailability	Capability Category 1 is acceptable for the application. CNP considers the estimates of unavailability used in the analysis to be appropriate.

Attachment V - Table V-2 – Fire PRA–Category I Summary

SR	Topic	Resolution
FSS-E3	PROVIDE a mean value of, and statistical representation of, the uncertainty intervals for the parameters used for modeling the significant fire scenarios.	Because of the wide range in modeling choices, such as the t-squared growth model provided for in NUREG/CR-6850, modeling uncertainties drive the fire PRA results insights. The development of the parametric data uncertainty characterization provides information that does not provide meaningful insights into the decision-making process. Thus, the parametric data uncertainty is not applicable to the NFPA-805 LAR submittal. The parametric data uncertainty will be accomplished in a future update to the fire PRA. In the fire PRA, the endpoints of the fire damage state trees represent mean values for each of the fire scenarios. The uncertainty distributions for these fire damage states include the parametric data uncertainty associated with the ignition frequencies as well as the other branch points on the fire damage state tree. The results of this development will be provided in an update to calculation PRA-FIRE-17663-015-LAR.
FSS-G5	For any scenario selected per FSS-G3, if the adjoining physical analysis units are separated by active fire barrier elements, QUANTIFY the effectiveness, reliability, and availability of the active fire barrier element.	The quantification of scenarios in the multi-compartment analysis has been reviewed and revised to take the appropriate credit for active fire barriers, consistent with the changes made in SR PP-B5 above. This is documented in calculation file PRA-FIRE-17663-011C.
FSS-G6	QUANTIFY the risk contribution of any selected multicompartment fire scenarios consistent with the FQ requirements.	The risk contribution of multi-compartment analyses has been quantified and documented in calculation file PRA-FIRE-17663-011C. This documentation has been updated to reflect the revised fire PRA models and to address the FQ requirements.

Attachment V - Table V-2 – Fire PRA–Category I Summary

SR	Topic	Resolution
FSS-H5	DOCUMENT fire modeling output results for each analyzed fire scenario, including the results of parameter uncertainty evaluations (as performed) in a manner that facilitates Fire PRA applications, upgrades, and peer review.	Results Documentation. The fire PRA results documentation has been updated to reflect recent model changes and also to provide additional information regarding the quantification process, to better support Fire PRA applications, updates, upgrades and future peer reviews. Parametric Data Uncertainty. Because of the wide range in modeling choices, such as the t-squared growth model provided for in NUREG/CR-6850, modeling uncertainties drive the fire PRA results insights. The development of the parametric data uncertainty characterization provides information that does not provide meaningful insights into the decision-making process. Thus, the parametric data uncertainty is not applicable to the NFPA-805 LAR submittal. The parametric data uncertainty will be accomplished in a future update to the fire PRA. In the fire PRA, the endpoints of the fire damage state trees represent mean values for each of the fire scenarios. The uncertainty distributions for these fire damage states include the parametric data uncertainty associated with the ignition frequencies as well as the other branch points on the fire damage state tree. The results of this development will be provided in an update to calculation PRA-FIRE-17663-015-LAR.

Attachment V - Table V-2 – Fire PRA–Category I Summary

SR	Topic	Resolution
HRA-A4	TALK THROUGH (i.e., review in detail) with plant operations and training personnel the procedures and sequence of events to confirm that interpretation of the procedures relevant to actions identified in SRs HRA-A1, HRA-A2, and HRA-A3 is consistent with plant operational and training practices.	Several talk-throughs were conducted with CNP operators during the development of the fire PRA. The quantification of the fire scenarios was revised in 2010 following a fire PRA peer review, and during this quantification the risk-significant human failure events were discussed with plant operations personnel to confirm the interpretation of the procedures for the modeled human interactions.