

Enclosure 1  
to ULNRC-05781

**ENCLOSURE 1**  
**CALLAWAY PLANT NFPA 805 TRANSITION REPORT**

# Ameren Missouri Callaway Plant Unit 1

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



*Callaway Plant*

## Transition Report

**August 2011**

*Attachments C, D, E, G, K, S, U, V, and W of Enclosure 1 to this letter contain security-related information. Withhold from public disclosure under 10 CFR 2.390. Upon removal of Attachments C, D, E, G, K, S, U, V, and W of Enclosure 1, this letter is uncontrolled.*

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**Acronym List**

<b><u>Acronym</u></b>	<b><u>Description</u></b>
ADAMS	Agencywide Document Access and Management System
AEPS	Alternate Emergency Power Supply
AFW	Auxiliary Feedwater
AHJ	Authority Having Jurisdiction
ANS	American Nuclear Society
ANSI	American National Standards Institute
APCSB	Auxiliary and Power Conversion Systems Branch
ASB	Auxiliary Systems Branch
ASD	Atmospheric Steam Dump
ASME	American Society of Mechanical Engineers
ASP	Auxiliary Shutdown Panel
BTP	Branch Technical Position
CAR	Callaway Action Request
CCW	Component Cooling Water
CDF	Core Damage Frequency
CFAST	Consolidated Model of Fire Growth and Smoke Transport
CFR	Code of Federal Regulations
CMEB	Chemical Engineering Branch
CSD	Cold Shutdown
CT	Current Transformer
DB	Design Basis
DBA	Design Basis Accident
DBD	Design Basis Document
DID	Defense-In-Depth
EDG	Emergency Diesel Generator
EEE	Engineering Equivalency Evaluation
EEEE	Existing Engineering Equivalency Evaluation
EOP	Emergency Operating Procedure
EPRI	Electric Power Research Institute
ERFBS	Electrical Raceway Fire Barrier Systems
ERO	Emergency Operating Procedure
ESF	Engineered Safety Features
ESW	Essential Service Water
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
F&O	Facts and Observations
FP	Fire Protection
FPA	Foote, Pagni, and Alvares
FPE	Fire Protection Engineer
FPIE	Full Power Internal Events
FPP	Fire Protection Program
FPRA	Fire Probabilistic Risk Assessment
FR	Federal Register
FSA	Fire Safety Analysis

**Acronym List (continued)**

FSAR	Final Safety Analysis Report
FSAR SA	Final Safety Analysis Report – Site Addendum
FSAR SP	Final Safety Analysis Report – Standard Plant
GDC	General Design Criteria
GL	Generic Letter
HEP	Human Error Probability
HGL	Hot Gas Layer
HRE	Higher Risk Evolution
HRR	Heat Release Rate
HVAC	Heating Ventilation and Air Conditioning
IEEE	Institute of Electrical and Electronic Engineers
IM	Inspection Manual
IN	NRC Information Notice
ISLOCA	Inter-System LOCA
KSF	Key Safety Function
LAR	License Amendment Request
LB	Licensing Basis
LERF	Large Early Release Frequency
LFS	Limiting Fire Scenario
LOCA	Loss of Coolant Accident
LPG	Liquid Petroleum Gas
LSELS	Load Shed and Emergency Load Sequencer
MCA	Multi-compartment Analysis
MCB	Main Control Board
MCR	Main Control Room
MEFS	Maximum Expected Fire Scenario
MHIF	Multiple High Impedance Fault
MQH	McCaffrey, Quintiere, Harkleroad
MSO	Multiple Spurious Operation
NEI	Nuclear Energy Institute
NEIL	Nuclear Electric Insurance Limited
NFPA	National Fire Protection Association
NPO	Non-Power Operations
NRC	Nuclear Regulatory Commission
NSCA	Nuclear Safety Capability Assessment
NSHC	No Significant Hazards Consideration
NSPC	Nuclear Safety Performance Criteria
NUMARC	Nuclear Management and Resource Council
NUREG	US Nuclear Regulatory Commission Publication
OL	Operating License
OMA	Operator Manual Action
P&ID	Piping and Instrumentation Diagram
PORV	Power-Operated Relief Valve
POS	Plant Operational State
PRA	Probabilistic Risk Assessment
PSA	Probabilistic Safety Assessment
PVC	Polyvinyl Chloride
PWR	Pressurized Water Reactor
PWROG	Pressurized Water Reactor Owners Group

**Acronym List (continued)**

QA	Quality Assurance
RCA	Radiological Controlled Area
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RFR	Request for Resolution
RG	Regulatory Guide
RHR	Residual Heat Removal
RI-PB	Risk-Informed, Performance-Based
RIS	Regulatory Issue Summary
RP	Radiation Protection
RWST	Refueling Water Storage Tank
SER	Safety Evaluation Report
SFPE	Society of Fire Protection Engineers
SG	Steam Generator
SNUPPS	Standardized Nuclear Unit Power Plant System
SSC	Structures, Systems and Components
SSE	Safe Shutdown Earthquake
TDAFP	Turbine Driven Auxiliary Feedwater Pump
TDAFW	Turbine Driven Auxiliary Feedwater [Pump]
TH	Thermal Hydraulic
TR	Transition Report
UE	Union Electric
VFDR	Variance from Deterministic Requirements
WCAP	Westinghouse Commercial Atomic Power

**System Designator List**

<b><u>System Designator</u></b>	<b><u>System Description</u></b>
AB	Main Steam
AC	Main Turbine
AD	Condensate
AE	Feedwater
AF	Feedwater Heater Extraction & Drains
AK	Condensate Demineralizer
AL	Auxiliary Feedwater
AN	Demineralized Water Stg & Transfer
AP	Condensate Transfer & Storage
AQ	Condensate & Feedwater Chemical Addition
BB	Reactor Coolant
BG	Chemical & Volume Control
BL	Reactor Makeup Water
BM	Steam Generator Blowdown
BN	Borated Refueling Water Storage
CA	Steam Seals
CB	Main Turbine Lube Oil
CC	Generator Hydrogen & CO <sub>2</sub>
CD	Generator Seal Oil
CE	Stator Cooling Water
CF	Lube Oil Storage, Transfer & Purification
CG	Condenser Air Removal
CH	Main Turbine Control Oil
DA	Circulating Water
DB	Cooling Tower Makeup & Blowdown
DC	Intake Traveling Screens
DD	Cooling Water Chemical Control System
DE	Intake Structure & Water Treatment
DG	Circ Water Hydraulic
EA	Service Water
EB	Closed Cooling Water
EC	Fuel Pool Cooling & Cleanup
EF	Essential Service Water
EG	Component Cooling Water
EJ	Residual Heat Removal
EM	High Pressure Coolant Injection
EN	Containment Spray
EP	Accumulator Safety Injection
FA	Auxiliary Steam Generator
FB	Auxiliary Steam
FC	Auxiliary Turbines
FE	Aux Steam Chemical Addition
GA	Plant Heating
GB	Central Chilled Water
GC	Service & Store Bldg HVAC
GD	ESW Pump House Bldg HVAC

**System Designator List (continued)**

GE	Turbine Building HVAC
GF	Misc. Building HVAC
GG	Fuel Building HVAC
GH	Radwaste Building HVAC
GK	Control Building HVAC
GL	Auxiliary Building HVAC
GM	Diesel Building HVAC
GN	Containment Cooling
GP	Containment ILRT
GS	Containment Hydrogen Control
GT	Containment Purge
HA	Gaseous Radwaste
HB	Liquid Radwaste
HC	Solid Radwaste
HD	Decontamination
HE	Boron Recycle
HF	Secondary Liquid Waste
JA	Aux Oil Store & Transfer
JE	Emergency Fuel Oil
KA	Compressed Air
KB	Breathing Air
KC	Fire Protection
KD	Domestic Water
KE	Fuel Handling, Storage & Reactor Vessel Service
KF	Cranes, Hoists & Elevators
KH	Service Gas (CO <sub>2</sub> - H <sub>2</sub> )
KJ	Standby Diesel Engine
KS	Chemical Storage & Handling
LA	Sanitary Drainage
LB	Roof Drains
LC	Yard Drains
LD	Chemical Waste
LE	Oily Waste
LF	Floor & Equipment Drains
MA	Main Generator
MB	Excitation & Voltage Regulation
MD	Ehv Switch Yard Bus
MR	Startup Or Reserve Transformer
NB	4160 VAC
NE	Standby Generation - Diesels
NF	Load Shedding & Emergency Load Sequencing
NG	480 VAC
NK	125 VDC
NN	Instrument Ac Power
PA	13.8 kVAC
PB	4160 VAC
PE	Alternate Emergency Power

**System Designator List (continued)**

PG	480 VAC
PJ	250 VDC
PK	125 VDC
PN	Instrument Ac Power
PQ	Uninterruptible Ac Power
QA	Normal Lighting & 120/208 V Power
QB	Standby Lighting Ac
QD	Emergency Lighting Dc
QE	Telephone System
QF	Public Address System (Intercom)
QG	Grounding (Power Block Grounding Grid)
QH	Cathodic Protection
QJ	Freeze Protection
QN	Misc. Equipment System
QT	Permanent Road Lighting
RC	BOP DCS
RD	Meteorological Instrumentation
RH	Closed Circuit TV
RJ	Plant Computer
RK	Plant Annunciator
RL	Main Control Board
RM	Process Sampling
RP	Misc. Control Panels
RR	Radioactivity Release Information
RT	Emergency Response Facility Information System
RU	Communications (Computer)
SA	Engineered Safety Feature Actuation
SB	Reactor Protection
SC	Reactor Instrumentation
SD	Area Radiation Monitoring
SE	Ex-Core Neutron Monitoring
SF	Reactor Control
SG	Seismic Instrumentation
SH	Post Accident Monitoring
SJ	Nuclear Sampling
SK	Plant Security
SL	Main Turbine Control
SM	Containment Isolation
SP	Process Radiation Monitoring
SQ	Loose Parts Monitoring
SR	In-Core Neutron Monitoring
SS	ATWS Mitigation System Actuation Circuitry
ST	Emergency Response Facility Information System
UB	EOF & TSC Diesels, Security Building/System

## **Executive Summary**

Union Electric Company (dba Ameren Missouri) will transition the Callaway Plant Unit No. 1 (Callaway Plant) 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 existing fire protection licensing basis will be superseded.

The transition process consisted of a review and update of Callaway Plant documentation, including the development of a Fire Probabilistic Risk Assessment (PRA) using NUREG/CR 6850 as guidance. This Transition Report summarizes the transition process and results. This Transition Report contains information:

- Required by 10 CFR 50.48(c)
- Recommended by guidance document Nuclear Energy Institute (NEI) 04-02 Revision 2, "Guidance for Implementing a Risk-Informed, Performance-Based Fire Protection Program Under 10 CFR 50.48(c)," and appropriate Frequently Asked Questions (FAQs)
- Recommended by guidance document Regulatory Guide (RG) 1.205 Revision 1

Section 4 of the Transition Report 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 Transition Report provides regulatory evaluations and associated attachments, including:

- Changes to License Condition
- Changes to Technical Specifications, Orders, and Exemptions
- Determination of No Significant Hazards and evaluation of Environmental Considerations.

The attachments to the Transition Report 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 in the preparation of this License Amendment Request.



## **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), "National Fire Protection Association Standard 805 (NFPA 805)." Ameren Missouri is implementing the Nuclear Energy Institute methodology NEI 04-02, "Guidance for Implementing a Risk-informed, Performance-based Fire Protection Program Under 10 CFR 50.48(c)" (NEI 04-02), to transition Callaway Plant from its current fire protection licensing basis to the new requirements as outlined in NFPA 805. This report describes the transition methodology utilized and documents how Callaway Plant 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, and Section (f), "Decommissioning."

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. This rule 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, or 10 CFR 50.48(f) for plants shutdown in accordance with 10 CFR 50.82(a)(1).

NEI developed NEI 04-02 to assist licensees in adopting NFPA 805 and making the transition from their current fire protection licensing basis to one 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.<sup>1</sup>

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

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<sup>1</sup> Where referred to in this document NEI 04-02 is Revision 2 and "RG 1.205" is Revision 1.

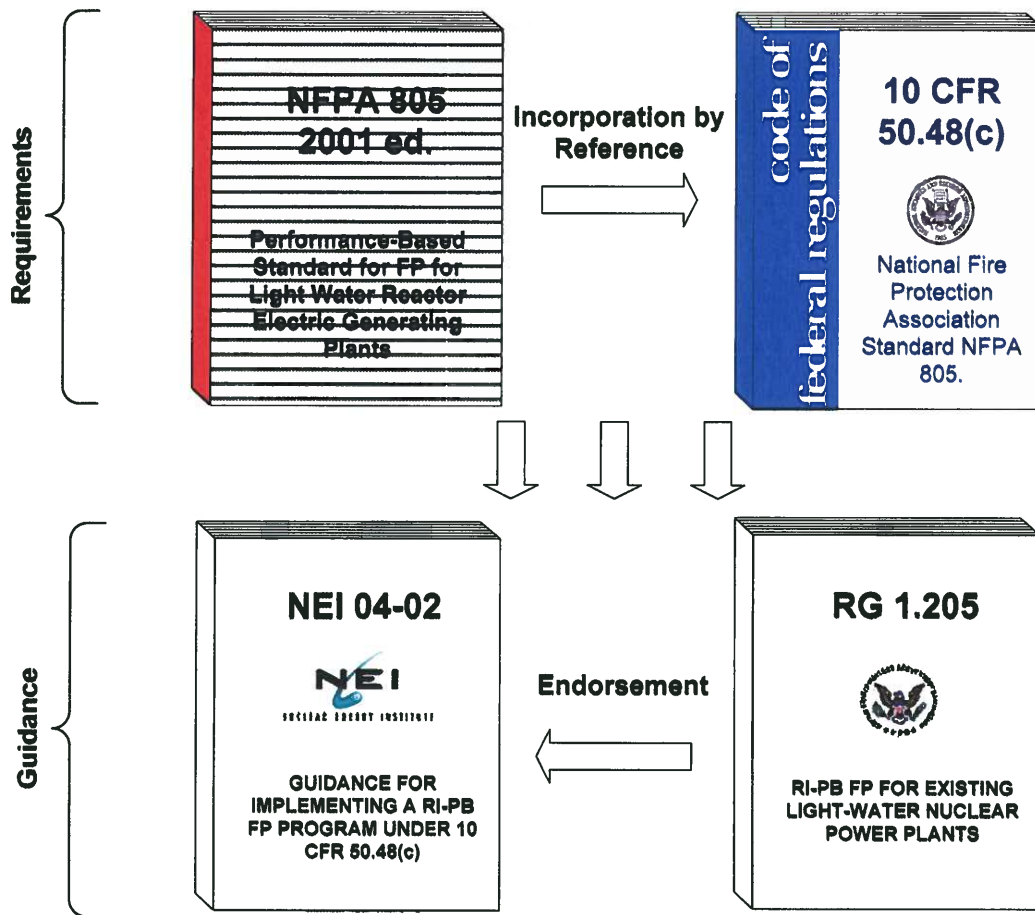


Figure 1-1 – NFPA 805 Transition – Implementation Requirements/Guidance

### 1.1.2 Transition to 10 CFR 50.48(c)

#### 1.1.2.1 Start of Transition

In December 2005, Union Electric Company (dba as AmerenUE now Ameren Missouri) elected to transition the fire protection licensing basis to the alternative in 10 CFR 50.48(c), “National Fire Protection Association Standard NFPA 805.” On December 2, 2005, AmerenUE submitted a letter of intent to adopt NFPA 805 in accordance with 10 CFR 50.48(c) (ML053420340).

By letter dated January 31, 2006, the Nuclear Regulatory Commission (NRC) acknowledged receipt of the letter of intent. The letter stated that the Callaway Plant enforcement discretion period will begin on December 31, 2005 and expire on December 31, 2007. The letter did not specifically grant the three-year enforcement discretion period requested in the letter of intent (ML053530018).

The NRC revised the “Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues,” in Federal Register Notice 19905 dated April 18, 2006 to extend the enforcement discretion period to 3 years for those licensees that committed to transition to 10 CFR 50.48(c).

By letter dated November 14, 2006, Ameren Missouri submitted a letter to the NRC documenting the understanding that the enforcement discretion period for Callaway Plant was extended to three years and that the enforcement discretion started when the project started in April 2006.

By letter dated December 8, 2008, the NRC acknowledged that AmerenUE had made substantial enough progress in its transition of Callaway Plant to NFPA 805 to grant additional enforcement discretion. Accordingly, the enforcement discretion period for the Callaway Plant, Unit 1, was extended until 6 months after the date of the NRC's safety evaluation approving the second pilot plant License Amendment Request (LAR) (ML083380731). By letter dated June 28, 2011 Ameren Missouri committed to a LAR submittal date on or before September 2, 2011. The additional time for LAR submittal being necessary to complete internal review and approval of the LAR in addition to site acceptance review of the supporting documentation.

In accordance with NRC Enforcement Policy, the enforcement discretion period will continue following submittal of the LAR for Callaway Plant, i.e., until NRC approval of the LAR is completed.

#### **1.1.2.2 Transition Process**

The transition to NFPA 805 includes the following high level activities:

- A new Nuclear Safety Capability Assessment (NSCA).
- A new Fire Probabilistic Risk Assessment (PRA) using NUREG/CR 6850, EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities, as guidance.
- Completion of activities required to transition the pre-transition Licensing Basis to 10 CFR 50.48(c) as specified in NEI 04-02 and RG 1.205.
- Modifications implemented at the plant.

### **1.2 Purpose**

The purpose of the Transition Report 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 complies 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 the resulting impact on the Licensing Basis.

## 2.0 OVERVIEW OF EXISTING FIRE PROTECTION PROGRAM

### 2.1 Current Fire Protection Licensing Basis

Callaway Plant was licensed to operate on October 18, 1984 (full power license). As a result, the Callaway Plant fire protection program is based on compliance with 10 CFR 50.48(a) and the following License Condition:

Union Electric Company; Callaway Plant Unit No. 1; Facility Operating License NPF-30 Condition 2.C(5) states:

*(5) Fire Protection (Section 9.5.1.7 SER and Section 9.5.1.8, SSER #3)*

- a) Deleted per Amendment No. 169.*
- b) Deleted per Amendment No. 169.*
- c) The licensee shall implement and maintain in effect all provisions of the approved fire protection program as described in the SNUPPS Final Safety Analysis Report for the facility through Revision 15, the Callaway site addendum through Revision 8, and as approved in the SER through Supplement 4, subject to provision d below.*
- d) 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.*
- e) Deleted (see Amendment No. 30, January 13, 1988).*

### 2.2 NRC Acceptance of the Fire Protection Licensing Basis

NRC letter dated September 30, 1976 transmitted to Union Electric Company a copy of Appendix A to BTP ASB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976." In addition to transmitting that document, the NRC requested that Union Electric Company re-evaluate the fire protection provisions at Callaway Plant. The Callaway Plant fire hazards analysis was developed in response to this request. At the time of Callaway Plant's initial licensing, Callaway Plant was part of the Standardized Nuclear Unit Power Plant System (SNUPPS). As a consequence, the original Callaway Plant fire hazards analysis was developed, submitted to the NRC, and then approved by the NRC in two parts, the SNUPPS Standard Plant Final Safety Analysis Report (FSAR) and the Callaway Site Addendum FSAR.

On April 1, 1977 and April 15, 1977, Union Electric Company submitted the proposed fire protection program for Callaway Plant. The NRC Staff reviewed the documents and issued fire protection review questions by NRC letters dated November 3, 1977 and April 14, 1978. Union Electric Company responded to the questions in letters dated May 3, 1978 and July 5, 1978.

NRC letter dated May 15, 1981 requested that Union Electric Company submit a letter documenting the Callaway Plant Fire Protection Program compliance with the requirements set forth in Appendix R of 10 CFR 50 and with the BTP ASB 9.5-1, identifying any exceptions, and providing alternatives for an equivalent level of fire protection. On June 15, 1981 and June 17, 1981, Union Electric Company submitted to the NRC the comparison of Callaway Plant's program to the applicable portions of Appendix R and to BTP ASB 9.5-1. On June 29, 1981 Union Electric Company submitted Revision 4 to the FSAR which included a revised fire hazards analysis.

In October 1981 the NRC issued NUREG 0830, "Safety Evaluation Report Related to the Operation of Callaway Plant, Unit No. 1," to document the continuing review of the Callaway Plant fire protection program. On November 15, 1982, Union Electric Company submitted to the NRC a fire hazards analysis for the Control Room. In May 1984 the NRC issued NUREG-0830, Supplement 3, to document the continuing review of the Callaway Plant fire protection program on the basis of a site audit and information provided by Union Electric Company in letters dated February 1 and 24, 1984 and March 14, 1984. In NUREG-0830, Supplement 3 (SSER 3), the NRC approved various features of the fire protection program, as well as deviations from staff guidelines. The staff concluded that the fire protection program, with the accepted deviations, was in compliance with Appendix A to BTP CMEB 9.5-1 and GDC 3.

In a submittal to the NRC dated August 23, 1984, Union Electric Company provided a detailed outline of new post-fire safe shutdown procedures and identified where new isolation switches and modifications to existing isolation switches were required to enhance the ability for plant shutdown with a postulated fire in the Main Control Room. In October 1984, the NRC issued NUREG-0830, Supplement 4 (SSER 4), with final approval of the fire protection program based on SSER 4, Section 1.9, "License Conditions," License Condition (18). License Condition (18) required compliance with Appendix R of 10 CFR 50 (SER Section 9.5.1.7 and SSER 3 Section 9.5.1.8 – permanent; and SSER 4 Section 9.5.1.5 – at the first refueling outage). These License Conditions were satisfied and subsequently deleted from the License as follows: SSER 4 Section 9.5.1.5 by License Amendment No. 30, dated January 13, 1988, and SER Section 9.5.1.7 and SSER 3 Section 9.5.1.8 by License Amendment 169, dated October 25, 2005.

The following fire protection program deviations are noted as having been previously approved by the NRC as documented in NUREG-0830, Supplement 3;

1. Deviation is described in the February 1, 1984 Union Electric submittal and describes the fact that the fire detection system standby power supply does not meet the recommendations of NFPA 72D. The fire detection system power supply is an acceptable deviation from the guidelines in Section C.6.a of BTP CMEB 9.5-1.
2. Deviation is described in the June 29, 1981 and February 1, 1984 Union Electric Company submittals and describes the fact that the 3-hour barrier requirement was not met for the 1½-hour elevator doors, pressure, watertight, and missile-resistant doors and equipment hatches in the Auxiliary Building. The protection provided for fire barrier penetrations is an acceptable deviation from the guidelines in Section C.5 of BTP CMEB 9.5-1.
3. Deviation is described in the February 1, 1984 Union Electric submittal and describes the fact that the specific temperature rise limitation criterion (ASTM E 119) for fire barrier penetration seals was not met. The protection provided for fire barrier penetrations is an acceptable deviation from the guidelines in Section C.5 of BTP CMEB 9.5-1.
4. Deviation is described in the February 1, 1984 Union Electric Company submittal and describes the justification for lack of low level detectors in the Control Room. Due to ceiling height, there could be a delay in detecting an incipient fire. With the installation of duct detectors in the Control Room HVAC, detection for the Control Room meets the guidelines of Section C.7.a of BTP CMEB 9.5-1.
5. Deviation is described in the June 29, 1981, February 1, 1984, and February 24, 1984 Union Electric Company submittals and describes the use of partial suppression with fire stops in intervening cable trays in the area of the component cooling water system pumps. The protection provided for the component cooling water pumps meets the guidelines in Section C.5.b of BTP CMEB 9.5-1.

6. Deviation is described in the June 29, 1981 and February 1, 1984 Union Electric Company submittals and describes the diesel fuel oil day tank containment dike in each diesel generator room and the potential of leakage from a tank to spread from one diesel generator room to the other. The diesel fuel day tank and dike assembly meets the guidelines in Section C.7.i of BTP CMEB 9.5-1.
7. Deviation is described in June 29, 1981 and March 14, 1984 Union Electric Company submittals and describes the fact that the collection tank capacities in the Reactor Coolant Pump oil collection system are not sufficient to hold the oil from all of the Reactor Coolant Pumps. The protection provided for the Reactor Coolant Pumps meets the guidelines of Section C.7.a of BTP CMEB 9.5-1.
8. Deviation is described in the June 29, 1981 Union Electric Company submittal and describes the two sets of equipment hatchways in the northern and southern ends of the Auxiliary Building corridors with steel hatch covers and automatic sprinkler water curtains. The water curtains and steel covers provide a level of safety equivalent to the technical requirements of Section C.5.b of BTP CMEB 9.5-1.
9. Deviation is described in the March 14, 1984 Union Electric Company submittal and describes non-rated penetrations as numerous mechanical and electrical penetrations, the personnel hatch, and a fuel transfer tube through the reactor containment walls. The non-rated containment penetrations provide a level of safety equivalent to the technical requirements of Section C.5.b of BTP CMEB 9.5-1.
10. Deviation is described in the March 14, 1984 Union Electric Company submittal and describes the lack of fire proofing on the underside of the fuel building roof. The level of fire protection is acceptable based on the low fuel loading in the area.
11. Deviation is described in the June 29, 1981 Union Electric Company submittal and describes the non-rated cover on the trench connecting the fuel building and Radwaste tunnel. The level of fire protection is acceptable based on the separation distance and low combustible loading.
12. Deviation is described in the June 29, 1981 Union Electric Company submittal and describes vent openings separating the two compartments of Fire Area A-23. Because of the vent openings, the barrier wall cannot be fire rated and is non-rated. The level of fire protection is acceptable based on the configuration of the valves and low combustible loading.
13. Deviation is described in the March 14, 1984 Union Electric Company submittal and describes plant areas where automatic suppression and detection systems are not provided throughout the fire area. The fire protection provided for safe shutdown, with the approved deviations, meets the guideline in Section C.5.b of BTP CMEB 9.5-1.
14. Deviation is described in the February 2, 1984 Union Electric Company submittal and describes the justification for insufficient separation between the Load Shed and Emergency Load Sequencer (LSELS) panels. The redundant panels are located in the same area of the Main Control Room and their output relays are mounted back-to-back in a common panel. Procedures for manual starting of the emergency diesel generators and for manual sequencing the safe shutdown loads onto the Class 1E AC busses from outside the Main Control Room satisfy the requirements of Section C.5.b of BTP CMEB 9.5-1.

### **3.0 TRANSITION PROCESS**

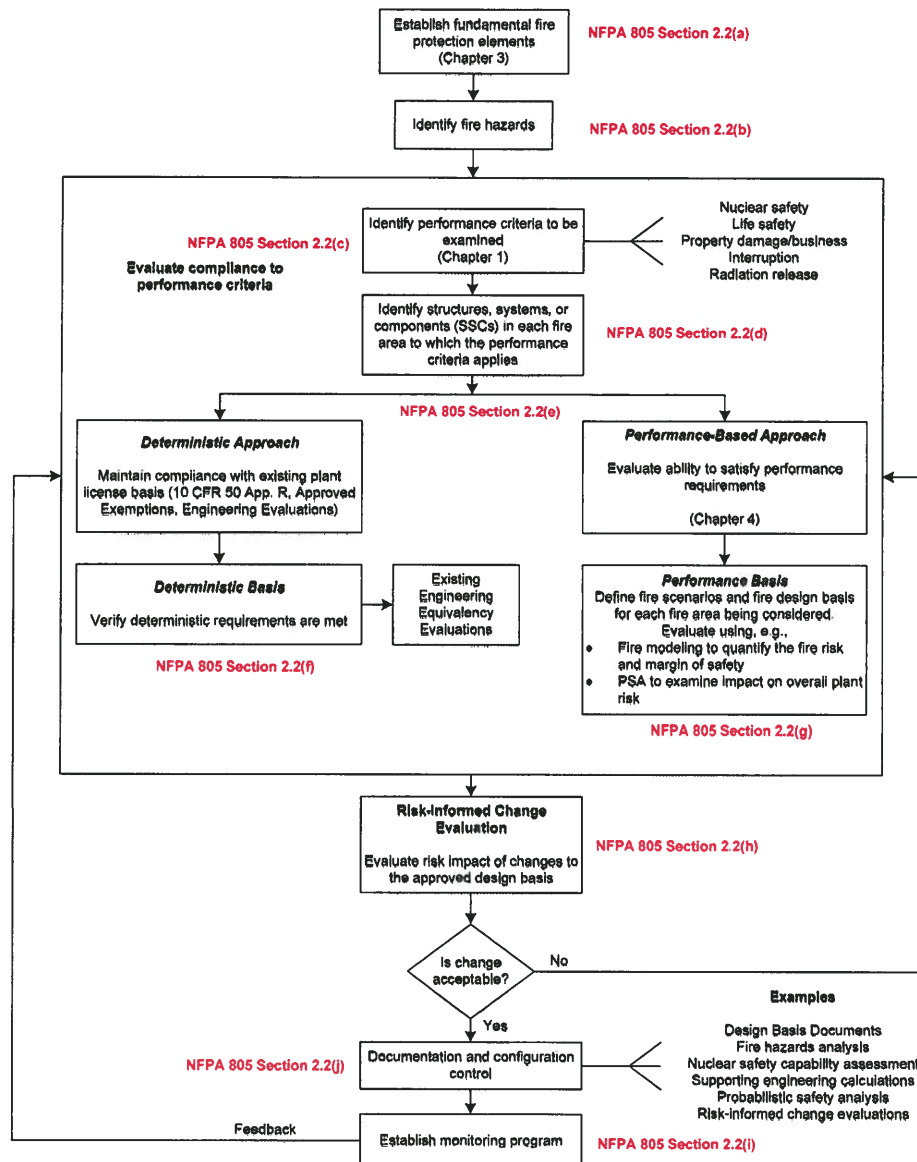
#### **3.1 Background**

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 to it;
2. Submit 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. Submit a LAR;
5. Complete transition activities that can be completed prior to the receipt of the License Amendment;
6. Receive a Safety Evaluation; and
7. Complete implementation of the new licensing basis, including completion of 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, Ameren Missouri 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 Figure 2-2 of NFPA 805]<sup>2</sup>

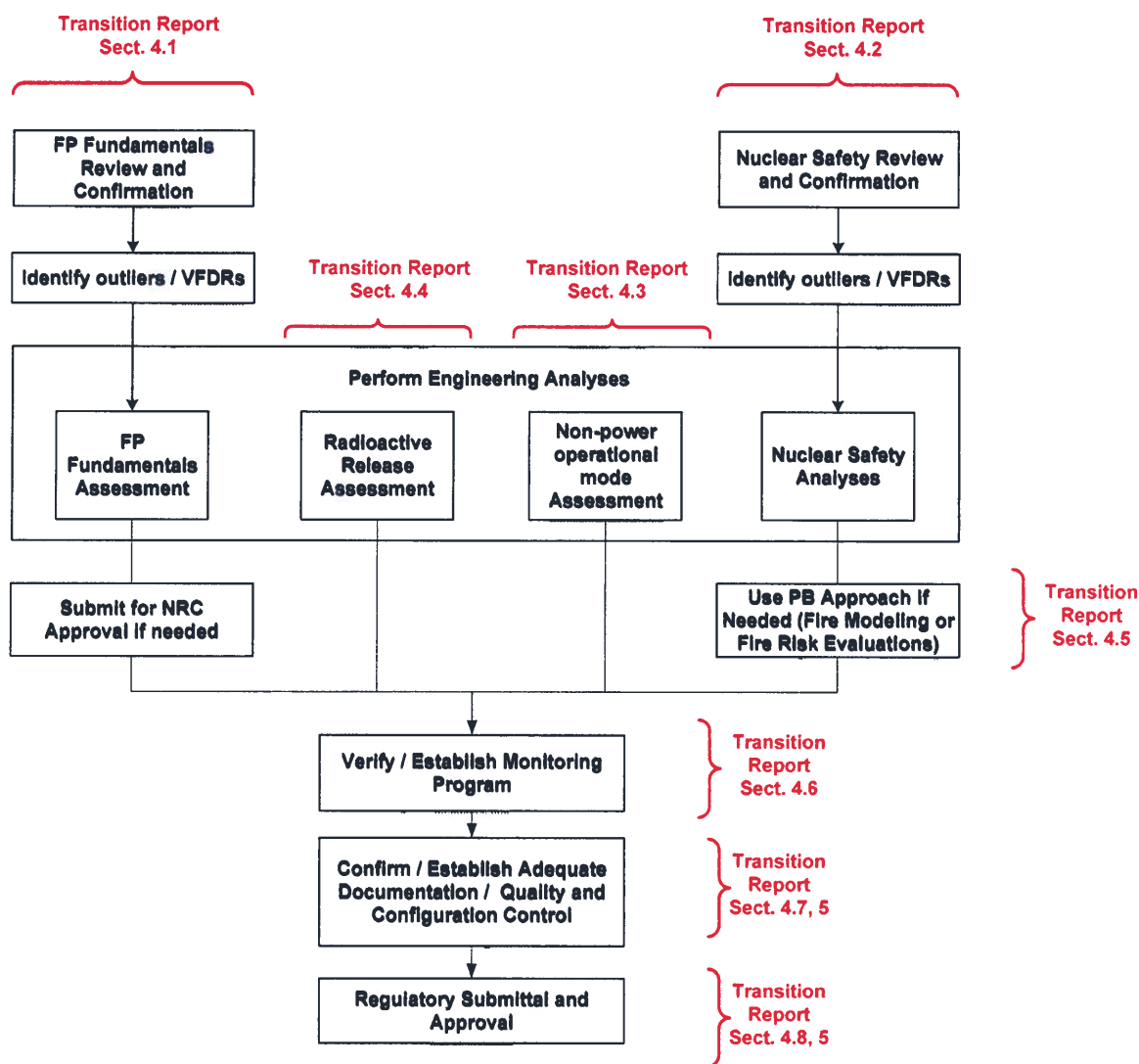
### 3.3 NEI 04-02 – NFPA 805 Transition Process

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

<sup>2</sup> 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.



Section 4.0 of NEI 04-02 describes the detailed process for assessing a fire protection program for compliance with NFPA 805, as shown 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 (FAQs)

The NRC has worked with NEI and two Pilot Plants (Oconee Nuclear Station and Harris Nuclear 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 the 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 will be 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 after the Pilot Plant Safety Evaluations.

Attachment H contains the list of 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 in the preparation of this LAR.

## **4.0 COMPLIANCE WITH NFPA 805 REQUIREMENTS**

### **4.1 Fundamental Fire Protection Program and Design Elements**

"The Fundamental Fire Protection Program 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 meets these criteria and for identifying the fire protection program 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 Callaway Plant Fire Protection Program to the requirements of NFPA 805 Chapter 3 was performed and documented in Callaway Plant Calculation KC-43 entitled "NFPA 805 Code Comparison." Callaway Plant Calculation KC-43 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 against the current fire protection program. Upon completion of the activities associated with the review, the following compliance statement(s) was used:

- Complies – For those sections/subsections determined to meet the specific requirements of NFPA 805.
- Complies with Clarification – For those sections/subsections determined to meet the requirements of NFPA 805 with clarification.
- Complies by previous NRC approval – For those sections/subsections where the specific NFPA 805 Chapter 3 requirements are not met but previous NRC approval of the configuration exists.
- Complies with use of Existing Engineering Equivalency Evaluations (EEEEEs) – For those sections/subsections determined to be equivalent to the NFPA 805 Chapter 3 requirements as documented by engineering analysis.
- Complies, with Required Action – For those sections/subsections determined to meet the specific requirements of NFPA 805 after the completion of a modification or other implementation item, such as a procedure change or a work request. (See Attachment S for details).
- Submit for NRC Approval – For those sections/subsections for which approval is sought in this LAR submittal in accordance with 10 CFR 50.48(c)(2)(vii). A summary of the bases of acceptability is provided. (See Attachments L and T for details.)

In some cases multiple compliance statements have been assigned to a specific NFPA 805 Chapter 3 section/subsection. Where this is the case, each compliance/compliance basis statement clearly references the corresponding requirement of NFPA 805 Chapter 3.

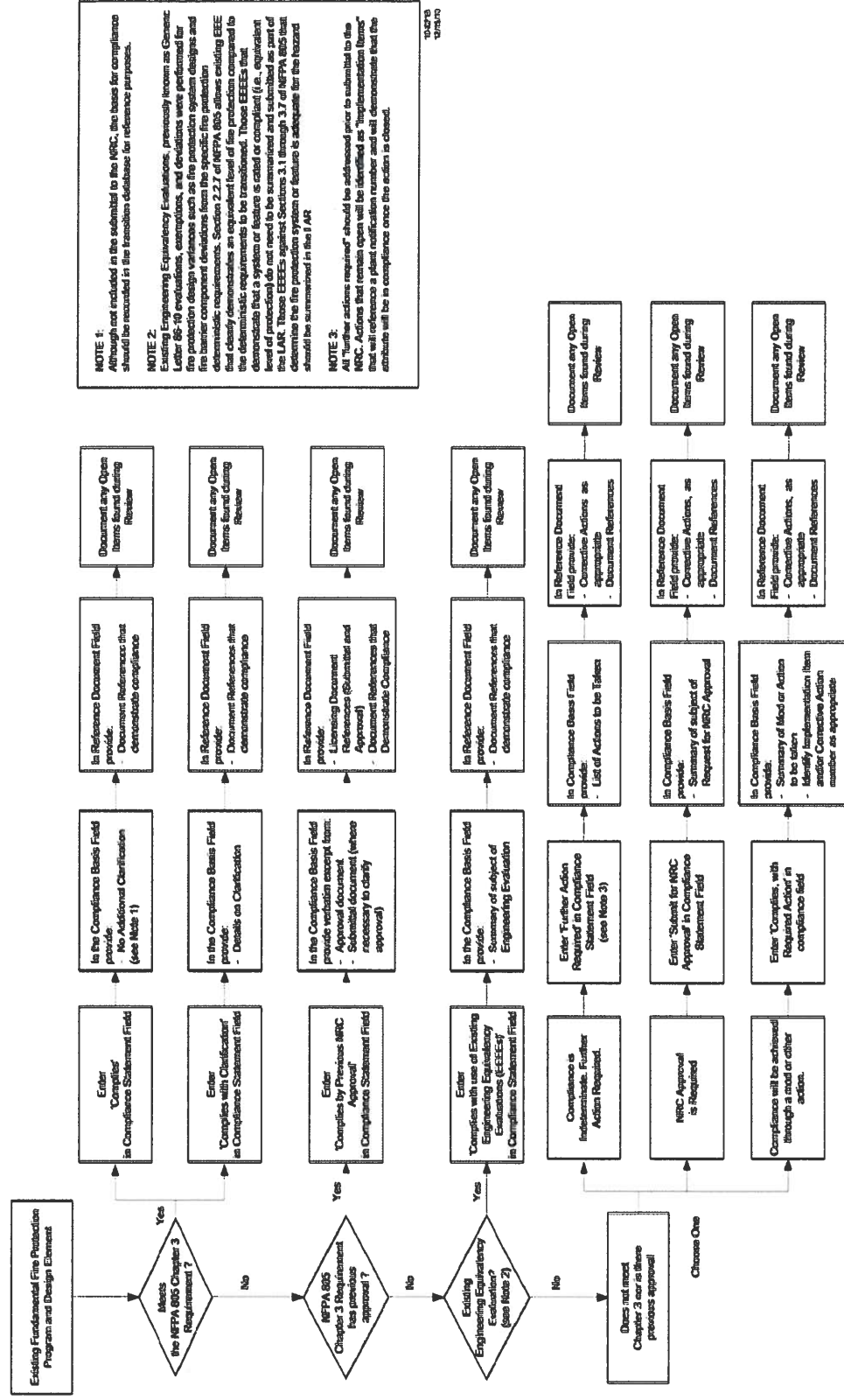


Figure 4-1 – Fundamental Fire Protection Program and Design Elements Transition Process  
[Based on NEI 04-02 Figure 4-2]<sup>3</sup>

<sup>3</sup> 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 EEEs is included in Section 4.2.2.

#### **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." This table provides the compliance basis for the requirements in NFPA 805 Chapter 3. Except as identified in Sections 4.1.2.2 and 4.1.2.3, Attachment A demonstrates that the fire protection program at Callaway Plant either:

- Complies directly with the requirements of NFPA 805 Chapter 3,
- Complies with the requirements of NFPA 805 Chapter 3 with clarification,
- Complies through the use of existing engineering equivalency evaluations which are valid and of appropriate quality, or
- Complies with a previously NRC approved alternative to NFPA 805 Chapter 3 and therefore the specific requirement of NFPA 805 Chapter 3 is supplanted,
- Complies with 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 activity. (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. Ameren Missouri requests that the NRC concur that prior approval was provided for the following sections of NFPA 805 Chapter 3:

- 3.3.8 – Clarification on the specific approval of the Emergency Diesel Generator Day Tank dikes.
- 3.6.1 and 3.6.2 – Hose stations in the ESW pump house are supplied by the ESW system rather than the fire protection system.
- 3.9.1 – Clarification of the specific approval of the Reactor Building (Containment) manual fire protection system.
- 3.11.3 – Clarification on the specific approval of Reactor Building (Containment) hatches.

Although not related to Chapter 3 Requirements, clarification of prior NRC approval of the Auxiliary Shutdown Panel configuration is also requested in Attachment T.

The discussion of the prior approval, including appropriate reference documents, is provided in Attachment T.

##### **4.1.2.3 NFPA 805 Chapter 3 Requirements Not Previously Approved by NRC**

The following sections of NFPA 805 Chapter 3 are not specifically met nor do previous NRC approvals of alternatives exist:

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

- 3.3.5.1 – Approval is requested for existing wiring configurations above suspended ceiling.

The specific deviation and a discussion of how the alternative satisfies 10 CFR 50.48(c)(2)(vii) requirements is provided in Attachment L. Callaway Plant requests approval of these items.

#### **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 have equipment required for nuclear plant operations, such as Containment, Auxiliary Building, Control Building, Fuel Building, Radioactive Waste, Water Treatment, Turbine Building, and intake structures or structures that are identified in the facility’s pre-transition licensing basis.

The structures in the Owner Controlled Area were evaluated to determine those structures that contain equipment that is required to meet the nuclear safety performance criteria and radioactive release performance criteria described in Section 1.5 of NFPA 805.

These structures are listed in Attachment I and define the “Power Block.”

#### **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 Nuclear Safety Capability Assessment (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 non-power operational (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"*

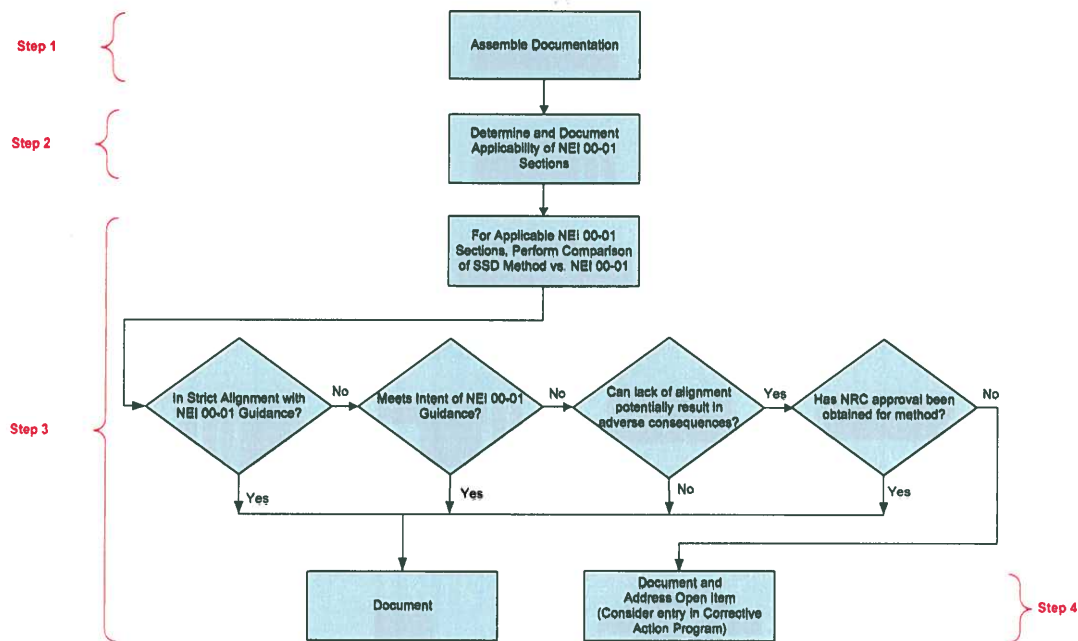
The NSCA methodology review evaluated the Callaway Plant Calculation KC-26, "Nuclear Safety Capability Assessment," Revision 0 methodology against the guidance provided in NEI 00-01, Revision 1 Chapter 3, "Deterministic Methodology," as discussed in Appendix B-2 of NEI 04-02. The methodology is depicted 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, Revision 1 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, Revision 1 and one of the following 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
- For those sections that do not align, an assessment was made to determine if the failure to maintain strict alignment with the guidance in NEI 00-01, Revision 1 could have adverse consequences. Since NEI 00-01, Revision 1 is a guidance document, portions of its text could be interpreted as 'good practice' or intended as an example of an efficient means of performing the analyses. If the section has no adverse consequences, these sections of NEI 00-01, Revision 1 can be dispositioned without further review. (Note: Comparison of the Callaway Plant NSCA methodology (Callaway Plant Calculation KC-26, "Nuclear Safety Capability Assessment," Revision 0) to Chapter 3 of NEI 00-01, Revision 1 determined that the methodology aligns with the guidance in applicable sections of NEI 00-01, Revision 1.)

The comparison of the Callaway Plant NSCA methodology to NEI 00-01, Revision 1, Chapter 3 (NEI 04-02 Table B-2) was performed and documented in Callaway Plant Calculation KC-26, "Nuclear Safety Capability Assessment," Revision 0.

### **Results from Evaluation Process**

The method used to perform the NSCA 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 directly or met the intent of the endorsed guidance with adequate justification as documented in Attachment B.



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

#### 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 are different than the previous deterministic regulations and guidance documented in 10 CFR 50 Appendix R; NUREG-0800, Section 9.5-1; and NEI 00-01, Revision 1, "Guidance for Post Fire Safe Shutdown Circuit Analysis," Chapter 3. NFPA 805 requires the licensee to maintain the reactor fuel in a Safe and Stable condition rather than to achieve and maintain cold shutdown.

##### Safe and Stable Conditions

Per NFPA 805 the definition of "Safe and Stable" is (Ref. NFPA 805, definition 1.6.56):

*"For fuel in the reactor vessel, head on and tensioned, safe and stable conditions are defined as the ability to maintain  $K_{eff} < 0.99$ , 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  $K_{eff} < 0.99$  and fuel coolant temperature below boiling."*

The nuclear safety goal of NFPA 805 (Ref. NFPA 805, Section 1.3.1) 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 minimum event coping duration.

For the plant to be in a Safe and Stable condition, it may not be necessary to perform a transition to cold shutdown as currently required under 10 CFR 50, Appendix R. This is consistent with the existing analysis documented in the Callaway Plant updated Final Safety



Analysis Report (FSAR) Appendix 5.4A "Safe Shutdown." Therefore, the unit may remain at or below the temperature defined by a Hot Standby plant operating state.

## Results

### Coping Time

The NFPA 805 Nuclear Safety Performance Criteria (NSPC) Analysis for Callaway Plant has been developed to ensure that the plant can achieve and maintain the reactor fuel in a Safe and Stable condition assuming that a fire event occurs during Callaway Plant Mode 1 (Power Operation), Mode 2 (Startup), Mode 3 (Hot Standby), and Mode 4 (Hot Shutdown), up to the point at which the MCC breakers for the Residual Heat Removal Loop Suction Isolation Valves, BBPV8702A, BBPV8702B, EJHV8701A, and EJHV8701B, are unlocked and closed. Refer to Attachment C (Table B-3) for the Systems and Components credited with supporting Safe and Stable plant conditions by fire area.

The NFPA 805 Nuclear Safety Capability Assessment (NSCA) has demonstrated that Callaway Plant can achieve and maintain Safe and Stable conditions for at least 10 hours with the minimum shift operating staff before having to take action to recharge the nitrogen accumulators. This initial 10 hours provides sufficient time for the Emergency Response Organization (ERO) to respond and be available to support Safe and Stable actions to extend Hot Standby conditions.

### Coping Time Bases

The minimum 10 hour coping duration is based on the normal operating pressure band of the nitrogen accumulators that support emergency operation of the Steam Generator Atmospheric Steam Dump (ASD) valves and the Turbine Driven Auxiliary Feedwater (TDAFW) Pump to Steam Generator flow control valves. Actions required to sustain Mode 3 (Hot Standby) beyond 10 hours includes an action to recharge the backup nitrogen accumulator tanks for the ASD valves and the TDAFW Pump to Steam Generator flow control valves. Recharging the tanks requires an operator to open a manual valve in Auxiliary Building fire area A-29. Opening this manual valve is normally performed once a shift and is considered to be a "skill of the craft" activity. Additionally, the backup nitrogen accumulator tanks may need recharging every 10 hours thereafter based on valve cycling demands.

The ASD valves and TDAFW Pump to Steam Generator flow control valves are air operated with a backup nitrogen gas supply tank. On loss of Instrument Air, which is conservatively assumed for NSCA, the backup nitrogen supply is relied on to maintain valve function from the MCR. The tank capacity is based on an assumed number of valve cycles and initial normal operating pressure. The 10 hour recharge time is based on the number of valve cycles assumed for a Station Black Out plus the available margin from the lower range of the normal accumulator operating pressure band. Operator action to refill the accumulators can extend the period in which these components can be used.

### Impact to Plant if Recharge Time is Exceeded

Should the nitrogen accumulator tanks lose adequate pressure inventory the valve function from the MCR would be lost. No damage to the valves would occur and they would retain their capability for full MCR function once the nitrogen tanks are recharged or instrument air recovered. Loss of the ASD function would eventually result in cycling of the steam generator code safety valves. The TDAFW to Steam Generator flow control can be locally controlled to throttle flow to the credited steam generators.

### Methods to Maintain Safe and Stable and Extend Hot Standby Conditions

The following describes methods to maintain the Safe and Stable condition and related support actions:

1. Callaway Plant has design features and procedures to ensure that an adequate source of inventory is provided for decay heat removal in sustained Mode 3 (Hot Standby) conditions. If the Condensate Storage Tank inventory is depleted the TDAFW pump suction will automatically transfer to the ESW supply from the Ultimate Heat Sink. Transfer can be automatic or manual from the Main Control Room.
2. RCS Pressure control is maintained by a combination of ASDs, Pressurizer Heaters, and/or Reactor Pressure Vessel Head Vent valves or PORVs.
3. Core decay heat in Mode 3 (Hot Standby) will be rejected to the secondary plant through one or more of the Steam Generators, and then to atmosphere through the Atmospheric Steam Dump valves.
4. The Callaway Plant reactor core design ensures that Keff is maintained  $<0.99$  while the plant is in sustained Mode 3 (Hot Standby). Gravity insertion of the control rods into the reactor core will ensure reactivity control is achieved for Mode 3 (Hot Standby) for the first 24 hours. Subsequently, maintaining Keff  $<0.99$  for Safe and Stable conditions will require boration of the RCS as described in FSAR Appendix 5.4A.
5. Inventory makeup to the RCS may only be required to account for expected RCS leakage and minimal RCS shrinkage as well as RCP seal injection. Callaway Plant has design features and procedures to ensure that an adequate source of borated inventory is provided for RCS inventory control in sustained Mode 3 (Hot Standby) (i.e., RCS inventory makeup from the RWST) utilizing the CVCS system. Callaway Plant has design features and procedures to ensure that an adequate method is provided for RCS inventory control in sustained Mode 3 (Hot Standby) utilizing the Reactor Pressure Vessel Head Vent valves. If RWST inventory is depleted it will be refilled using a combination of Reactor Make Up Water Storage Tank and Boric Acid Storage Tank inventories.
6. Callaway Plant has design features and procedures to ensure that an adequate source of heat input is maintained for RCS pressure control in sustained Mode 3 (Hot Standby) (i.e., a minimum of 150kW of pressurizer heater input to maintain the RCS sub-cooled) utilizing available combinations of the backup pressurizer heaters (Group A and Group B are 150kW each). The backup pressurizer heaters are capable of being energized from emergency diesel generator power.
7. Each emergency diesel generator (EDG) is provided with a storage tank having a fuel oil capacity sufficient to operate that diesel for a period of 7 days while the EDG is supplying maximum post LOCA load demand discussed in the FSAR, Section 9.5.4.2. The maximum load demand is calculated based on the fuel consumption by one EDG for operation at continuous rating for 7 days. This onsite fuel oil capacity is sufficient to operate the DGs for longer than the time to replenish the onsite supply from outside sources.

### Assessment of Risk

The fire brigade will respond to fire events within the Protected Area boundary in accordance with the guidance of EIP-ZZ-00226, "Fire Response Procedure For Callaway Plant." If the fire (non-hostile) meets the criteria of EIP-ZZ-00101, "Classification of Emergencies," an emergency declaration would be initiated. In the event of an Alert declaration or higher the On-

Shift Emergency Response Organization (ERO) will be supplemented by the On-Site ERO within 30 minutes during normal working hours and within 90 minutes during off-normal hours. The On-Site ERO will assist the Control Room personnel with implementation of the longer term actions necessary to maintain the fuel in a safe and stable configuration.

Following stabilization at Hot Standby, assessment and repair activities would commence to restore plant equipment needed to support RCS cool down in a safe and controlled manner. ERO resources will be available to assist the MCR in fire damage assessment and restoration of multiple success paths. Note that the Alternate Emergency Power supply (AEPS) is available but not credited in the NSCA.

- The actions required to maintain Safe and Stable conditions are limited.
- Procedures are in place for the Safe and Stable actions identified above.
- The 10 hour coping period provides reasonable assurance that adequate time is provided for the ERO to be available to augment the minimum plant staffing to support the longer term Safe and Stable actions.

For the most limiting fire scenarios, it is anticipated that the end state of the cool down would be an RCS temperature of approximately 350 F with a long term strategy for reactivity, decay heat removal, and inventory control. Long term subcooled natural circulation decay heat removal is provided by supplying ESW to the Steam Generators and steaming to atmosphere. The extended coping period at these conditions is based on the significant volume of water available for decay heat removal and reduced need for primary make up to match the RCS system losses.

The ERO provides sufficient resources for assessment of fire damage and completion of repairs to equipment necessary to maintain hot standby for an extended period, transition to cold shutdown, or return to power operations as dictated by the plant fire event.

### **Conclusions**

The initial coping time is sufficient to allow the ERO to activate. Limited actions are required and procedures are in place for those actions to maintain extended hot standby conditions. The ERO provides adequate capability to extend initial Hot Standby conditions, to transition to cold shutdown, or return to power operations as dictated by the plant fire event. The approach described above has demonstrated the capability to achieve and maintain the reactor fuel in a Safe and Stable condition for an indefinite period following a fire.

### **Safe and Stable Conditions / Non-Power Operations Assessment interface**

The Callaway Plant NFPA 805 Non-Power Operations Assessment provides reasonable assurance the reactor fuel is maintained in a safe and stable condition for fires which may occur in Mode 4 (Hot Shutdown) from the point at which the Motor Control Center (MCC) breakers for the Residual Heat Removal Loop Suction Isolation Valves, BBPV8702A, BBPV8702B, EJHV8701A, and EJHV8701B, are unlocked and closed, Mode 5 (Cold Shutdown) and Mode 6 (Refueling). Refer to Section 4.3 for a description of the Callaway Plant Non-Power Operations Assessment for fires that occur in the non-power operational modes.

#### 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 (Regulatory Position 2.21 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 Revision 5 (ML110070485) and consists of the following steps:

- Step 1: Clearly define the primary control station(s) and determine which pre-transition OMAs are taken at primary control station(s) (activities that occur in the Main Control Room are not considered pre-transition OMAs). Activities that take place at primary control station(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 variances from deterministic requirements (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 Callaway Plant Fire Protection Calculation KC-26, "Nuclear Safety Capability Assessment," fire protection calculations KC-81 through KC-161, "Fire Safety Assessments," as applicable; and Callaway Plant Calculation 17671-011, "Post-Fire Human Reliability Analysis." 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

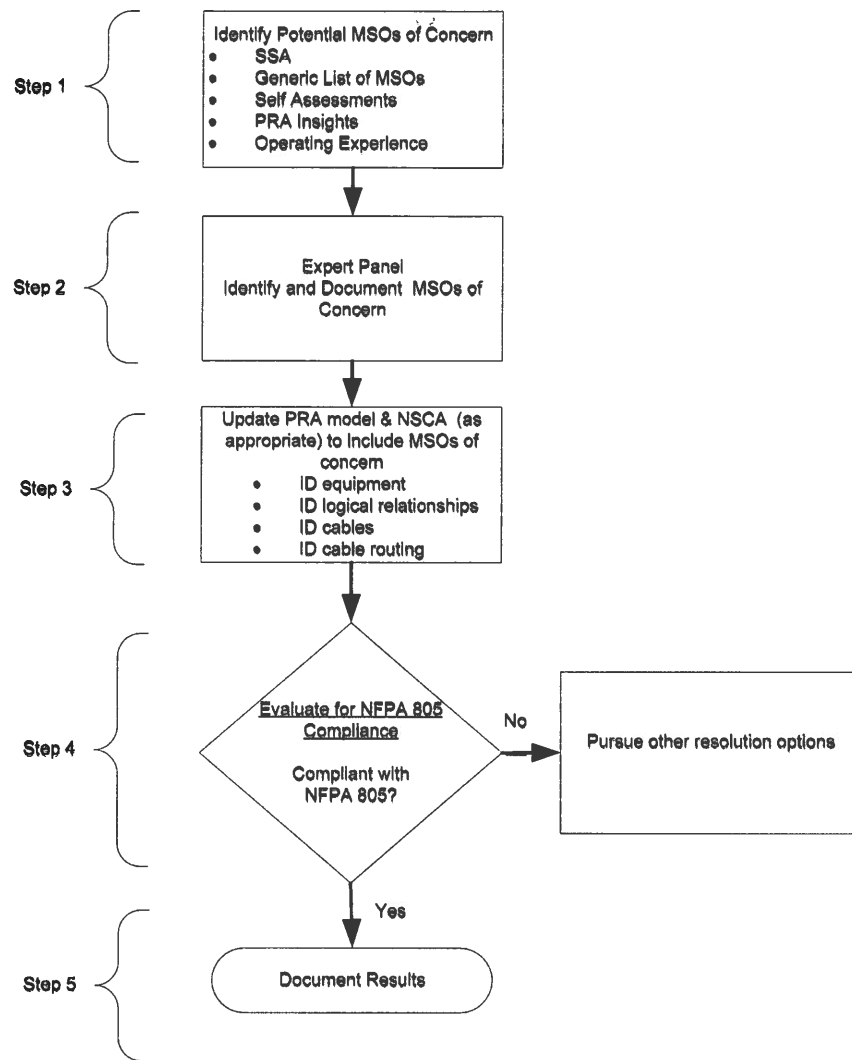
NEI 04-02 suggests that a licensee submit a summary of its approach for addressing potential fire-induced MSOs for NRC review and approval. As a minimum, NEI 04-02 suggests that the summary contain sufficient information relevant to methods, tools, and acceptance criteria used to enable the NRC to determine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

As part of the NFPA 805 transition project, a review and evaluation of Callaway Plant 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.

The approach outlined in Figure 4-3 (based on Figure 4-8 from FAQ 07-0038 Revision 3) was used to address fire-induced MSOs. 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 Fire PRA 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 Revision 3)**

## Results

Refer to Attachment F for the process used by Callaway Plant and the results from 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 EEEE remains valid.

In accordance with the guidance in RG 1.205, Regulatory Position 2.3.2, NEI 04-02, as clarified by FAQ 07-0054 Revision 1, "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 the 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 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 the LAR.

## Results

The review results for EEEEs are documented in Report R1843-001-003.

In accordance with the guidance in RG 1.205, Regulatory Position 2.3.2, NEI 04-02, as clarified by FAQ 07-0054 Revision 1, "Demonstrating Compliance with Chapter 4 of NFPA 805," EEEEs used to demonstrate compliance with Chapters 3 and 4 of NFPA 805 are referenced in the 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 (exemptions / deviations / safety evaluations) 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. Where NRC clarification is needed for acceptability of the deviation, the appropriate request for clarification is included in Attachment T.

The following licensing actions will be transitioned into the NFPA 805 fire protection program as previously approved (NFPA 805, Section 2.2.7). These licensing actions are considered compliant under 10 CFR 50.48(c).

- Deviation Request from Section C.7.a of BTP CMEB 9.5-1 for Control Room Complex (NRC SER dated May 1984)
- Request for Approval of Auxiliary Shutdown Panel Design (NRC SER dated October 1984)
- Request for Approval of Containment Fire Protection-Manual Suppression System (NRC SER dated October 1981)
- Deviation Request from Section D.1.j of Appendix A to BTP ASB 9.5-1 for Unrated Watertight Doors (NRC SER dated May 1984)
- Deviation Request from Section D.1.j of Appendix A to BTP ASB 9.5-1 for Elevator and Dumbwaiter Doors (NRC SER dated May 1984)
- Deviation Request from Section D.1.j of Appendix A to BTP ASB 9.5-1 for Unrated Missile Doors (NRC SER dated May 1984)
- Deviation Request from Section C.5 of Appendix A to BTP ASB 9.5-1 for Unit No. 1 Fire Barriers and Fire Barrier Penetrations (NRC SER dated May 1984)
- Deviation Request from Section C.6.a of Appendix A to BTP ASB 9.5-1 for Unit No. 1 Fire Detection System Power Supplies (NRC SER dated May 1984)
- Deviation Request from Section C.5.b of Appendix A to BTP ASB 9.5-1 for Component Cooling Pumps (NRC SER dated May 1984)
- Deviation Request from Section C.7.i of Appendix A to BTP ASB 9.5-1 for Emergency Diesel Generator Day Tank Dike Configuration (NRC SER dated May 1984)
- Deviation Request from Section C.7.a of Appendix A to BTP ASB 9.5-1 for Unit No.1- Reactor Coolant Pumps (NRC SER dated May 1984)
- Deviation Request from Section C.5.b of Appendix A to BTP ASB 9.5-1 for Hatchways (NRC SER dated May 1984)
- Deviation Request from Section C.5.b of Appendix A to BTP ASB 9.5-1 for Containment Penetrations (NRC SER dated May 1984)
- Deviation Request from Section C.5.b of Appendix A to BTP ASB 9.5-1 for Containment Electrical Penetrations (NRC SER dated May 1984)
- Deviation Request from Section C.5.b of Appendix A to BTP ASB 9.5-1 for Containment Mechanical Penetrations (NRC SER dated May 1984)
- Deviation Request from Section C.5.b of Appendix A to BTP ASB 9.5-1 for Fuel Transfer Tube (NRC SER dated May 1984)
- Deviation Request from Section C.5.b of Appendix A to BTP ASB 9.5-1 for Containment Hatches (NRC SER dated May 1984)
- Deviation Request from Section C.5.b of Appendix A to BTP ASB 9.5-1 for Partial Suppression Systems (NRC SER dated May 1984)
- Deviation Request from Section C.5.b of Appendix A to BTP ASB 9.5-1 for Partial Detection Systems (NRC SER dated May 1984)
- Deviation Request from Section D.1.j of Appendix A to BTP ASB 9.5-1 for Unit No.1-Fuel Building Roof lack of Fireproofing (NRC SER dated May 1984)



- Deviation Request from Section D.1.j of Appendix A to BTP ASB 9.5-1 for Unit No.1-Trench Cover (NRC SER dated May 1984)
- Deviation Request from Section D.1.j of Appendix A to BTP ASB 9.5-1 for Main Steam and Feedwater Valve Compartment (NRC SER dated May 1984)

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

- Deviation Request from Section D.1.j of Appendix A to BTP ASB 9.5-1 for Unrated Pressure-Resistant Doors (NRC SER dated May 1984)

This deviation is no longer required for transition because the pressure-resistant doors that were purchased and installed do not deviate from the required configuration.

Callaway Plant was licensed to operate after January 1, 1979 and, as such, 10 CFR 50 Appendix R is not applicable and exemptions from the regulation were not necessary. Since the deviations are either compliant with 10 CFR 50.48(c) or no longer necessary, as discussed in Attachment M, upon issuance of the new 10 CFR 50.48(c) license condition, the current Callaway Plant license condition will be superseded. It is Ameren Missouri's understanding that implicit in the superseding of the current license condition, all prior fire protection program Safety Evaluation Reports and commitments will be superseded in their entirety.

#### **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 Revision 1 (ML110140183). The methodology for performing the Fire Area Transition, depicted in Figure 4-4, is outlined as follows:

Step 1 – Assembled documentation. Gathered industry and plant-specific fire area analyses and licensing basis documents.

Step 2 – Documented fulfillment of nuclear safety performance criteria.

- Assessed accomplishment of nuclear safety performance goals. Documented the method of accomplishment, in summary level form, for the fire area.
- Documented evaluation of effects of fire suppression activities. Documented the evaluation of the effects of fire suppression activities on the ability to achieve the nuclear safety performance criteria.
- Performed licensing action reviews. Performed a review of the licensing aspects of the selected fire area and documented the results of the review. See Section 4.2.3.
- Performed existing engineering equivalency evaluation reviews. Performed a review of existing engineering equivalency evaluations (or created new evaluations) documenting the basis for acceptability. See Section 4.2.2.
- Pre-transition OMA reviews. Performed a review of pre-transition OMAs to determine those actions taking place outside of the main control room or outside of the primary control station(s). See Section 4.2.1.3.

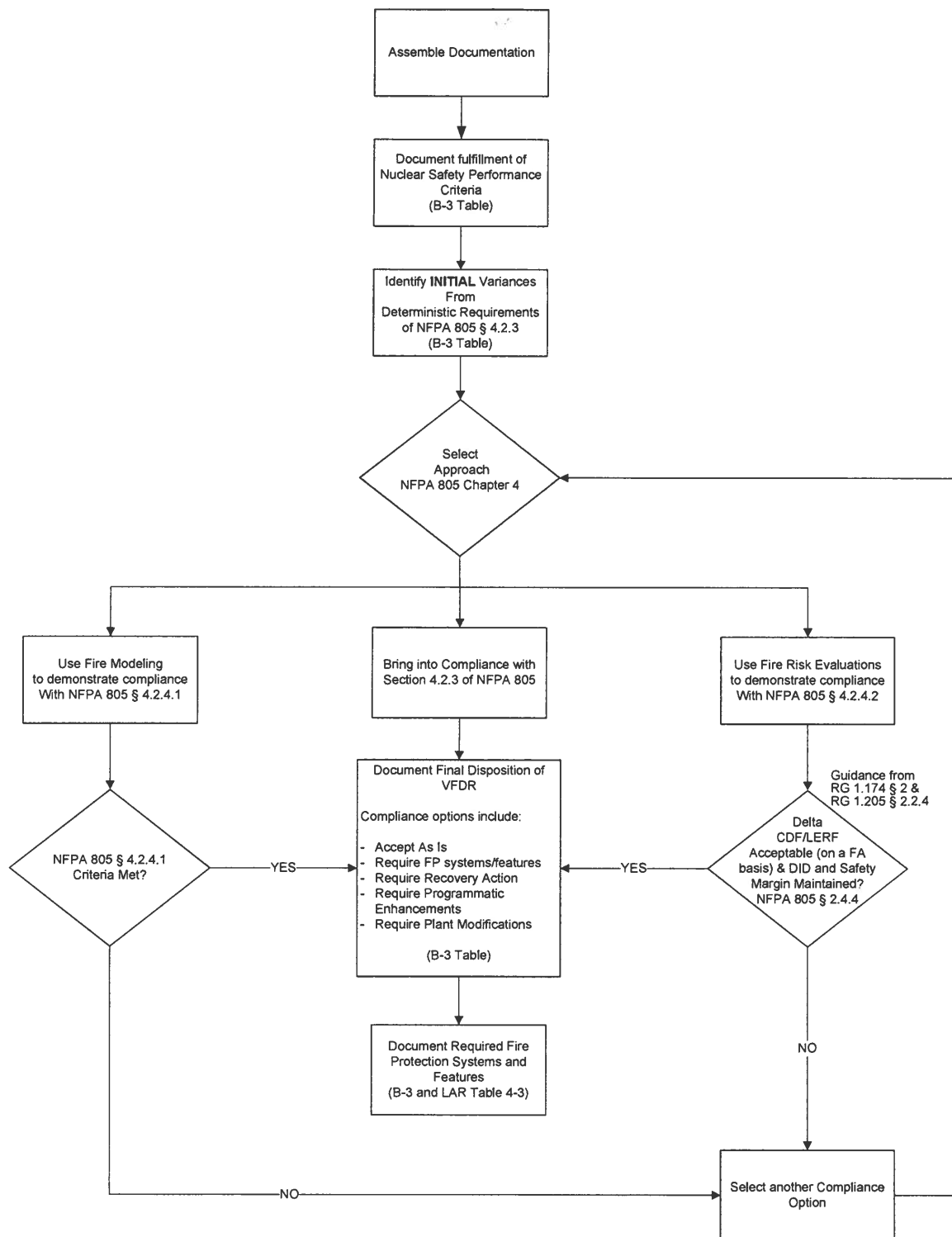
Step 3 – VFDR Identification and characterization and resolution considerations. Identified variances from the deterministic requirements of NFPA 805, Section 4.2.3. Documented variances as either a separation issue or a degraded fire protection system or feature. Developed VFDR problem statements to support resolution.

Step 4 – Performance-Based evaluations (Fire Modeling or Fire Risk Evaluations). See Section 4.5.2 for additional information.

Step 5 – Final Disposition.

- Documented final disposition of the VFDRs in Attachment C (NEI 04-02 Table B-3).
- For recovery action compliance strategies, ensured the manual action feasibility analysis of the required recovery actions was completed. Note: if a recovery action cannot meet the feasibility requirements established per NEI 04-02, then alternate means of compliance was considered.
- Documented the post transition NFPA 805 Chapter 4 compliance basis.

Step 6 – Documented required fire protection systems and features. Reviewed 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) 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). On a fire area basis, Attachment C summarizes compliance with Chapter 4 of NFPA 805.

NEI 04-02 Table B-3 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 Nuclear Safety Capability Assessment Documents are provided.
- Licensing Actions – Specific references to exemption requests / deviations / safety evaluations that will remain part of the post-transition licensing basis. A brief description of the condition and the basis for acceptability of the licensing action is provided. Attachment T contains items for which Callaway Plant is requesting concurrence of prior approval.
- EEEE – Specific references to EEEE that rely on determinations of “adequate for the hazard” that will remain part of the post-transition licensing basis. 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. Refer to Section 4.5.2 for a discussion of the performance-based approach.

## 4.3 Non-Power Operational Modes

### 4.3.1 Overview of Evaluation Process

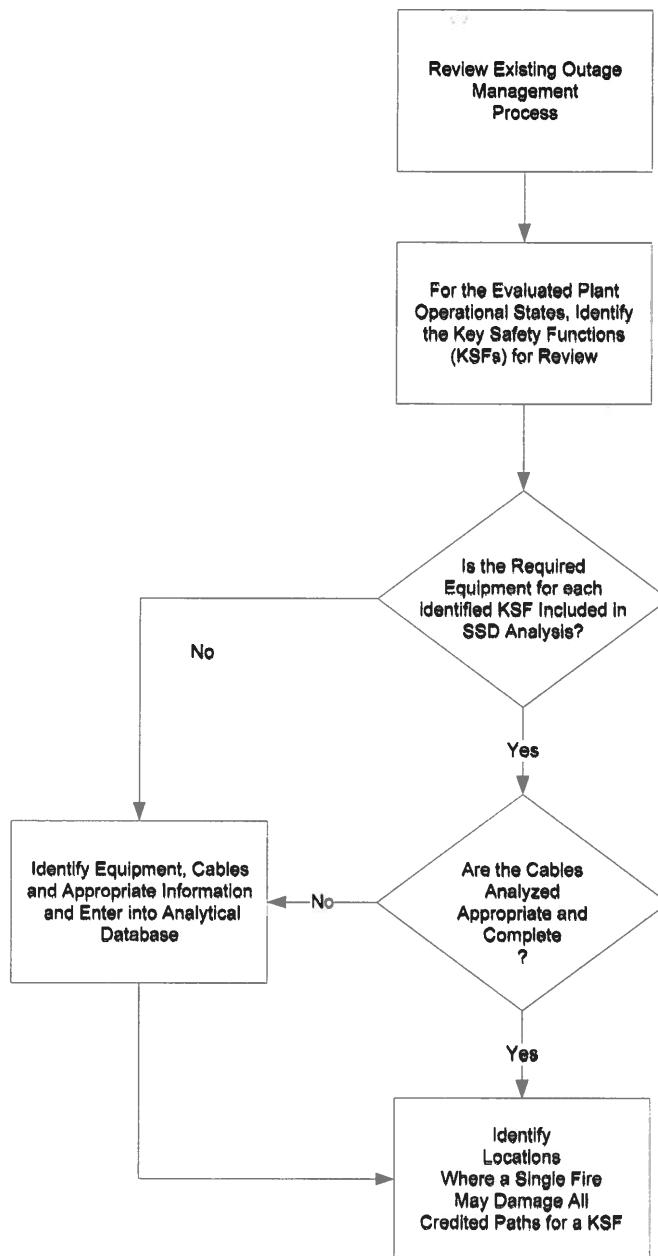
The Callaway Plant has implemented the process outlined in NEI 04-02 and FAQ 07-0040 Revision 4 (ML082200528), Clarification on Non-Power Operations (NPO). The goal (as depicted in Figure 4-6) is to ensure that contingency plans are established when the plant is in an NPO condition where the risk is 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 involves the following steps:

- Review the existing Outage Management Processes.
- Identify Equipment/Cables:
  - Review plant systems to determine success paths that support each of the defense-in-depth Key Safety Functions (KSFs), and
  - Identify cables required for the selected components and determine their routing.
- Perform Fire Area Assessments (identify pinch points – plant locations where a single fire may damage all success paths of a KSF).

Manage 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**

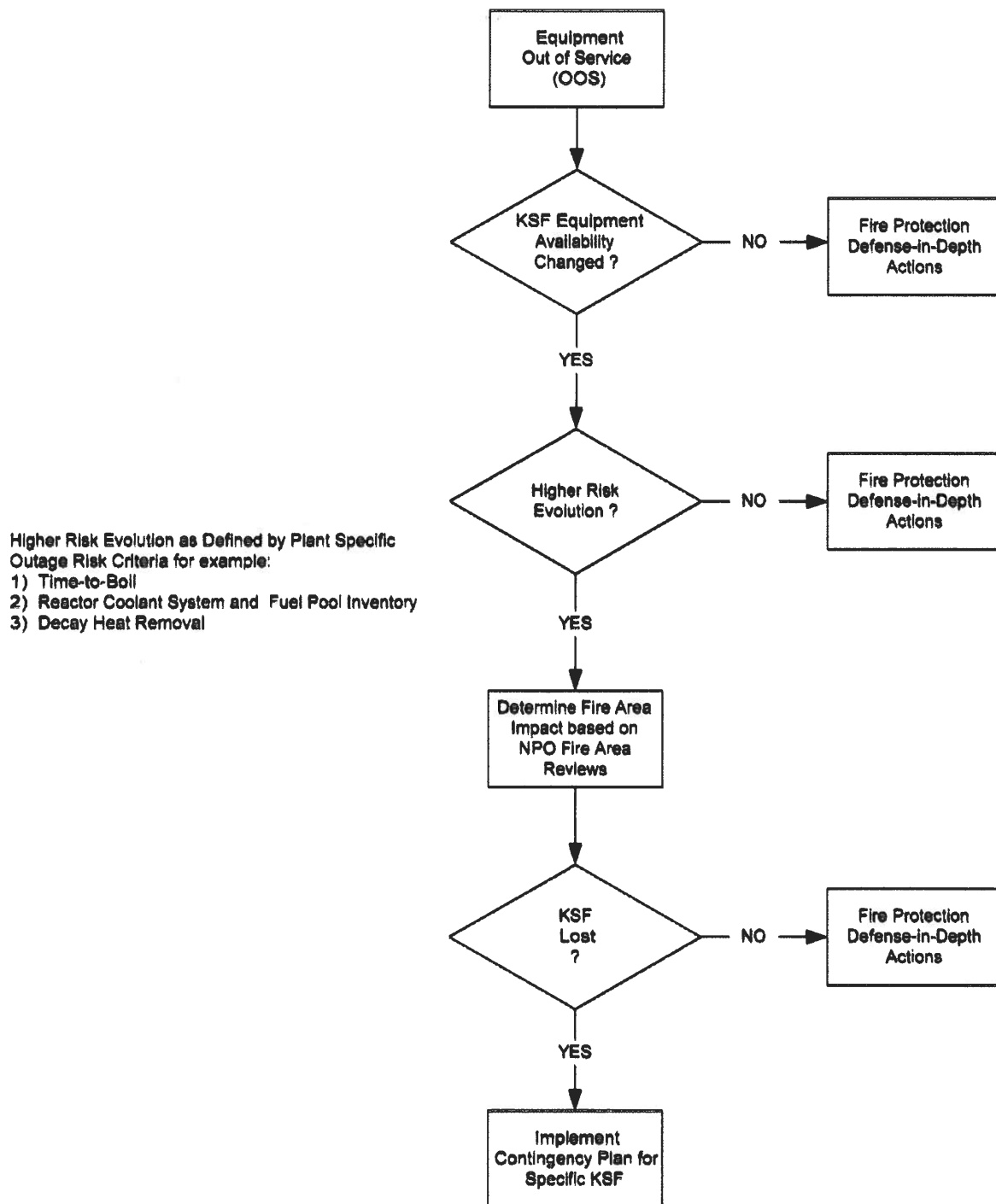


Figure 4-6 – Manage Pinch Points

#### 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 Callaway Plant Fire Protection Calculation KC-26, Nuclear Safety Capability Assessment. Components were identified to support the KSFs of Reactivity, Core Decay Heat Removal, Containment, Inventory, and associated support functions (process cooling and electrical power). A model was developed in the NFPA 805 Analysis Database (Genesis Solution Suite, SAFE-PB 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 NPO 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.

Callaway Plant Calculation KC-26, "Nuclear Safety Capability Assessment," 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 Revision 4, 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 Callaway Plant Calculation KC-26, "Nuclear Safety Capability Assessment," considers the following actions from FAQ 07-0040 Revision 4:

- 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 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 KSFs.
- 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 Defense-In-Depth (DID).

Refer to Attachment D for more complete details. Based on consideration of the vulnerable areas and incorporation of generic recommendations from FAQ 07-0040 Revision 4 into appropriate plant procedures and practices, prior to implementation of NFPA 805, the performance goals (KSFs) for NPO are fulfilled and the requirements of NFPA 805 will be met.

Implementation of the NPO fire area assessment results into the Callaway Plant outage management processes will be completed as part of LAR implementation. (See Attachment S).

#### **4.4 Radioactive Release Performance Criteria**

##### **4.4.1 Overview of Evaluation Process**

The guidance for performing this review is contained in NEI 04-02, Sections 4.3 and Appendix B and FAQ 09-0056 Revision 2 (ML102920405). The Nuclear Safety Performance Criteria requires the prevention of fuel cladding damage either deterministically or by providing "reasonable assurance that a fire will not result in a radiological release that adversely affects the public, plant personnel, or the environment" via a measure of Core Damage Frequency (CDF) and Large Early Release Frequency (LERF) along with defense-in-depth and safety margin considerations. As such, radiological release examination is limited to that radiation release to unrestricted areas due to the direct effects of fire suppression activities and shall be as low as reasonably achievable and shall not exceed applicable 10 CFR, Part 20, limits. The potential for radioactive release due to fire fighting activities is addressed via evaluation of fire pre-plans and fire brigade training materials. The methodology consisted of the following:

- Reviewed fire pre-plans and fire brigade training materials to identify fire protection program 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.
- Reviewed 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, provided a bounding analysis, quantitative analysis, or other analysis that demonstrates that the limitations for instantaneous release of radioactive effluents specified in the unit's Technical Specifications are met.

##### **4.4.2 Results of the Evaluation Process**

The Callaway Plant pre-fire plans, which are developed on a fire area / fire zone basis for structures and fire area basis for outside areas, were reviewed to screen them for applicability by fire area based on their potential to contain radioactive or contaminated materials. Callaway Plant Calculation KC-43, "Code Compliance Evaluation NFPA 805, Performance-Based Standard for the Fire Protection for Light Water Reactor Electric Generating Plants-2001 Edition," contains the detailed evaluation bases and results regarding when a fire area is screened in (affects radioactive release) or screened out (cannot affect radioactive release). Applicable pre-fire plans were then evaluated to ensure that the locations that have the potential for radioactive release due to fire fighting activities are subject to specific steps for containment and monitoring of potentially contaminated gaseous and liquid effluents. Existing engineering or procedural controls for possible liquid and gaseous effluents were reviewed to determine how effectively the specific steps in the pre-fire plans provide guidelines for the containment and monitoring for potentially contaminated effluents. Enhancements to the pre-fire plans were noted if required and are identified within Attachment S.

The pre-fire plans assume the plant is at power operation in terms of identifying specific hazards; however, the strategies employed do not rely on the operational status of the unit and are, therefore, valid during outage periods as well.

The Fire Brigade training materials were reviewed to ensure they contain adequate guidance regarding containment and monitoring of potentially contaminated gaseous and liquid effluents.



Enhancements to the Fire Brigade training materials were noted if required and are identified within Attachment S.

As allowed within FAQ 09-0056 Revision 2, a bounding analysis was performed for radioactive materials storage located in areas outside the permanent Radiologically Controlled Area (RCA) for items such as Sea-Land type container storage. Based on the bounding analysis, administrative controls, in addition to fire pre-plan containment and monitoring of potentially contaminated gaseous and liquid effluents, are established to ensure fires associated with locations outside the permanent RCA cannot exceed applicable 10 CFR, Part 20 limits. The additional administrative controls required to implement the bounding analysis are identified in Attachment S.

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

The radioactive release review determined the fire protection program 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.

#### **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, a Fire PRA (FPRA) model was developed for Callaway Plant 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). Callaway Plant conducted a peer review by independent industry analysts in accordance with RG 1.200 prior to a risk-informed submittal. The resulting fire risk assessment model is used as the analytical tool to perform Fire Risk Evaluations during the transition process.

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 Callaway Plant internal events PRA (PRA Update 4) was the starting point for the Fire PRA. In 2006, the Callaway Plant internal events PRA underwent a gap assessment, conducted by Sciencetech, against the Capability Category II requirements of ASME RA-S-2002, "Standard for Probabilistic Risk Assessment for Nuclear Power Plant Applications," with ASME RA-Sa-2003 and ASME RA-Sb-2005 Addenda, ASME, 2005.

To move the PRA Update 4 internal events model to Capability Category II of the Standard, a large-effort PRA upgrade project was planned and initiated in 2007. Since the Fire PRA would be developed concurrent with the internal events PRA upgrade project, the internal events PRA upgrade gaps were categorized as follows:

- **Category A** – Those internal events gaps that could have the highest impact on the fire PRA, and therefore should be addressed prior to the fire PRA peer review.
- **Category B** – Those internal events gaps that would likely have a lesser impact on the fire PRA, but should be addressed prior to submittal of the NFPA 805 license amendment request.
- **Category C** – Those gaps that will be addressed as part of the internal events PRA upgrade, but would not impact the fire PRA used for the transition to NFPA-805.

The Category A and Category B gaps are described, and dispositioned relative to the Fire PRA in Attachment U. Additionally, justification for the Category C gaps, i.e., that they do not impact the Fire PRA, is also provided in Attachment U. All of the internal events PRA gap analysis Findings that could affect the Fire PRA have been addressed and closed.

The Callaway Plant NFPA 805 Fire PRA Quality Summary report (17671-015) was developed to support the FPRA peer review by providing a single document that could be used to (1) understand the internal events PRA quality gaps, (2) identify which of these gaps were deemed to be relevant to the FPRA, (3) understand how FPRA-relevant gaps were closed and (4) understand the rationale for those gaps deemed not to be relevant to the FPRA. The FPRA peer review was conducted October 26 through October 30, 2009 and reviewed this report as part of the PRA Maintenance and Update element. The Peer Review team found the categorization and dispositioning acceptable, and had no findings related to this report.

#### **4.5.1.2 Fire PRA**

A Fire PRA model was developed for Callaway Plant 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 Callaway Plant. 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 Callaway Plant Fire PRA have been developed, reviewed by a peer review team, and updated.

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 Callaway Plant 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 (Version 5)
- Sprinkler Actuation Calculation using Fire Dynamics Simulator (Version 5)
- 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
- Temperature Sensitive Equipment Zone of Influence Study
- Plume/Hot Gas Layer Interaction Study
- Corner and Wall HRR
- Correlation for Heat Release Rates of Cables (Method of Lee)
- Correlation for Flame Spread over Horizontal Cable Trays (FLASH-CAT)
- Multi-Compartment Analysis Hot Gas Layer Analysis

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

#### **4.5.1.3 Results of Fire PRA Peer Review**

The Callaway Plant Fire PRA (Callaway Plant model of record 3Q09-FPRA) was peer reviewed against the requirements of ASME/ANS RA-Sa-2009, Part 4. The PWR Owner's Group (PWR OG) issued a report containing the results of the Callaway Plant Fire PRA Review on March 9, 2010 (LTR-RAM-II-10-019). 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 related 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.

Only one of ASME/ANS Fire PRA Standard areas was identified by the Fire PRA peer review team as meeting Capability Category I only requirements. The capability categories are defined in Part 4 of the combined PRA standard. The single Fire PRA supporting requirement classified as Capability Category I is also summarized in Attachment V 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. The fire scenarios that collectively represent 95% of the calculated fire risk and whose individual contribution is more than 1% of the fire risk are included as Attachment W. These criteria are consistent with the definition of “significant” from the combined ASME/ANS PRA Standard RA-Sa-2009 (for the term *significant accident progression sequence*).

#### 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

The fire modeling approach was not 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 Callaway Plant NFPA 805 transition. The methodology used is based upon the requirements of NFPA 805, industry guidance in NEI 04-02, and RG 1.205. These 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 variances from the deterministic requirements of Section 4.2.3 of NFPA 805 (VFDRs). 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 consists 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 (ML110140183):

**Step 1 – Preparation for the Fire Risk Evaluation.**

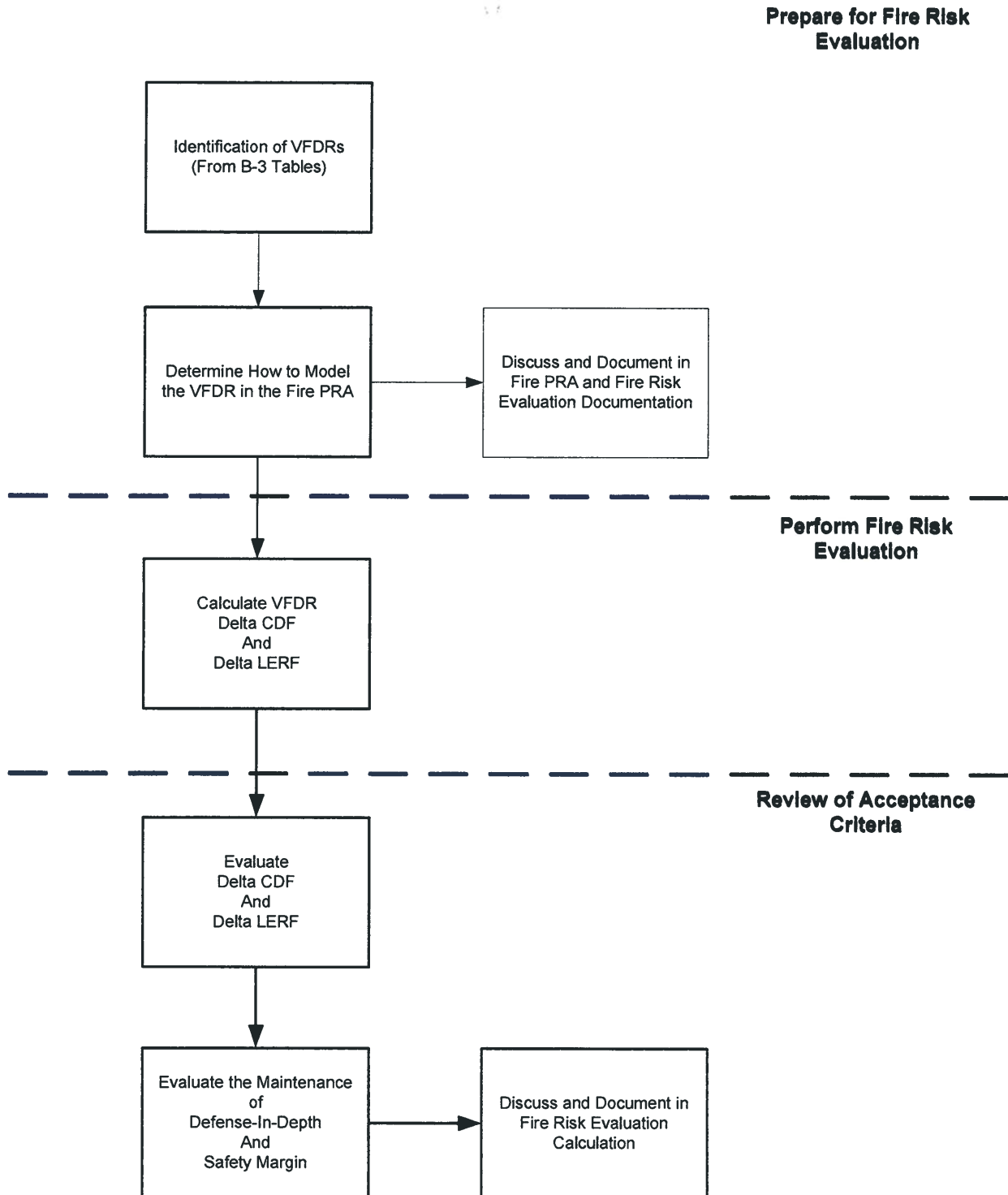
- Definition of the Variances from the Deterministic Requirements. The definition of the VFDR includes a description of problem statement and the section of NFPA 805 that is not met, type of VFDR (e.g., separation issue or degraded fire protection system), and proposed evaluation per applicable NFPA 805 section.
- Preparatory Evaluation – Fire Risk Evaluation Team Review. Using the information obtained during the development of the NEI 04-02 Table B-3 and the Fire PRA, a team review of the VFDR was performed. Depending on the scope and complexity of the VFDR, the team may include 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 of the Fire PRA modeling treatment of VFDR.
  - Ensure discrepancies were captured and resolved.

**Step 2 – Performed 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.
  - Fire area change in risk summary.

**Step 3 – Reviewed the Acceptance Criteria.**

- 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  $\Delta$ CDF (change in core damage frequency) and  $\Delta$ LERF (change in large early release frequency). The qualitative factors are defense-in-depth and safety margin.
  - Risk Acceptance Criteria. The transition risk evaluation was measured quantitatively for acceptability using the  $\Delta$ CDF and  $\Delta$ LERF 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 Callaway Plant NSCA and the NFPA 805 transition project activities have identified a number of variances from the deterministic requirements of NFPA 805 Section 4.2.3. 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  $\Delta$ CDF and  $\Delta$ LERF; 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 calculations are summarized in Attachment C.

Following completion of transition activities and planned modifications and 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 the overall plant should be provided. 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 Program

### 4.6.1 Overview of NFPA 805 Requirements for the NFPA 805 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 the adequacy of the existing surveillance, inspection, testing, compensatory measures, and oversight processes for transition to NFPA 805. This review considers the following:

- The adequacy of the scope of structure, systems and components within existing plant programs.

- The performance criteria for the availability and reliability of the required structure, 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**

The Monitoring program described in procedure EDP-ZZ-01101, "Fire Protection Monitoring Program Procedure," will be implemented after the safety evaluation issuance as part of the fire protection program transition to NFPA 805. The monitoring program described in this section is based on FAQ 10-0059 Revision 1 which is the latest available copy at the time of this submittal but is still under review by the NRC. Ameren Missouri will implement a monitoring program in accordance with the NRC approved version of FAQ 10-0059 during implementation (see implementation item in Attachment S). The monitoring process is comprised of four phases.

- Phase 1 – Scoping
- Phase 2 – Screening Using Risk Criteria
- Phase 3 – Risk Target Value Determination
- Phase 4 – Monitoring Implementation

##### **Phase 1 – Scoping**

The following categories of SSCs and programmatic elements will be reviewed during the implementation phase for inclusion in the NFPA 805 monitoring program:

- Structures, Systems, and Components required to comply with NFPA 805, specifically:
  - Fire protection systems and features required by the Nuclear Safety Capability Assessment
  - 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
- Fire Protection Programmatic Elements
- Key Assumptions in Engineering Analyses (specifically analyses performed to demonstrate compliance with the nuclear safety and radioactive release performance criteria)

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 programs and in the existing post transition system/program health program governed by APA-ZZ-00703, "Fire Protection Operability Criteria and Surveillance Requirements," and EDP-ZZ-01131, "Plant Health and Performance Monitoring Program," respectively. 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 programs and in the existing system/program health program. The post NFPA 805 transition programs are adequate for routine monitoring of these SSCs. Note that the post NFPA 805 transition programs for both the inspection and test programs and



system/program health will reflect the results of the risk informed evaluation performed using EPRI Report TR-1006756, "Fire Protection Surveillance Optimization and Maintenance Guide for Fire Protection Systems and Features," referenced within NEI 04-02 Table B-1, LAR Attachment A.

## **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 High Safety Significant SSCs and programmatic elements. This will be accomplished at the component, programmatic element, and/or functional level. Since risk is evaluated at the analysis unit level (fire compartment, fire area, fire zone, or ignition source), criteria must be developed to determine those analysis units for which the SSCs are considered High Safety Significant.

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 are those that meet the following criteria:

Risk Achievement Worth (RAW) of the monitored parameter  $\geq 2.0$

(AND) either

Core Damage Frequency (CDF)  $\times$  (RAW)  $\geq 1.0\text{E-}7$  per year

(OR)

Large Early Release Frequency (LERF)  $\times$  (RAW)  $\geq 1.0\text{E-}8$  per year

High Safety Significant (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 the existing inspection and test programs and in the existing system/program health program.

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 are established based on the required fire protection and nuclear safety capability SSCs and programmatic elements assumed level of performance in the supporting analyses. Action levels are established for the SSCs at the component level, program level, or functionally through the use of the pseudo system or the 'performance monitoring group' concept. The actual action level is determined based on the number of component, program or functional failures within a sufficiently bounding time period (~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 monitoring program, once the monitoring scope and criteria are established. The corrective action process governed by APA-ZZ-00500, "Corrective Action Program," is used to address performance of fire protection and nuclear safety SSCs that do not meet performance criteria.

For High Safety Significant fire protection and nuclear safety SSCs that are monitored, unacceptable levels of availability, reliability, and performance will be reviewed against the established action levels. If an action level is triggered, the Corrective Action Program is used to identify the negative trend. A corrective action plan will then be developed to ensure performance returns to the established level.

A periodic assessment of the Monitoring Program will be included within the scope of the Nuclear Oversight Department's routine Fire Protection Program assessment which is described in Section 4.7.3. The scope of the Monitoring Program assessment will include the following:

- Review 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 nuclear safety capability assessment systems?
- Have the supporting analyses been revised such that the performance criteria are no longer applicable or new fire protection and nuclear safety capability assessment SSCs, programmatic elements and/or functions need to be in scope?
- Based on the assessment period, are there any trends in monitored elements that should be addressed that are not being addressed?

## **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, Callaway Plant has documented analyses to support compliance with 10 CFR 50.48(c). The analyses are being performed in accordance with Ameren Missouri's 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 were created as part of transition to 10 CFR 50.48(c) to ensure program implementation following receipt of the safety evaluation. The design basis documentation is captured in fire protection calculations KC-81 through KC-161, "Fire Safety Analysis." Appropriate cross references will be established to supporting documents as required by Ameren Missouri processes. Figure 4-8 depicts the planned post-transition documentation and relationships.

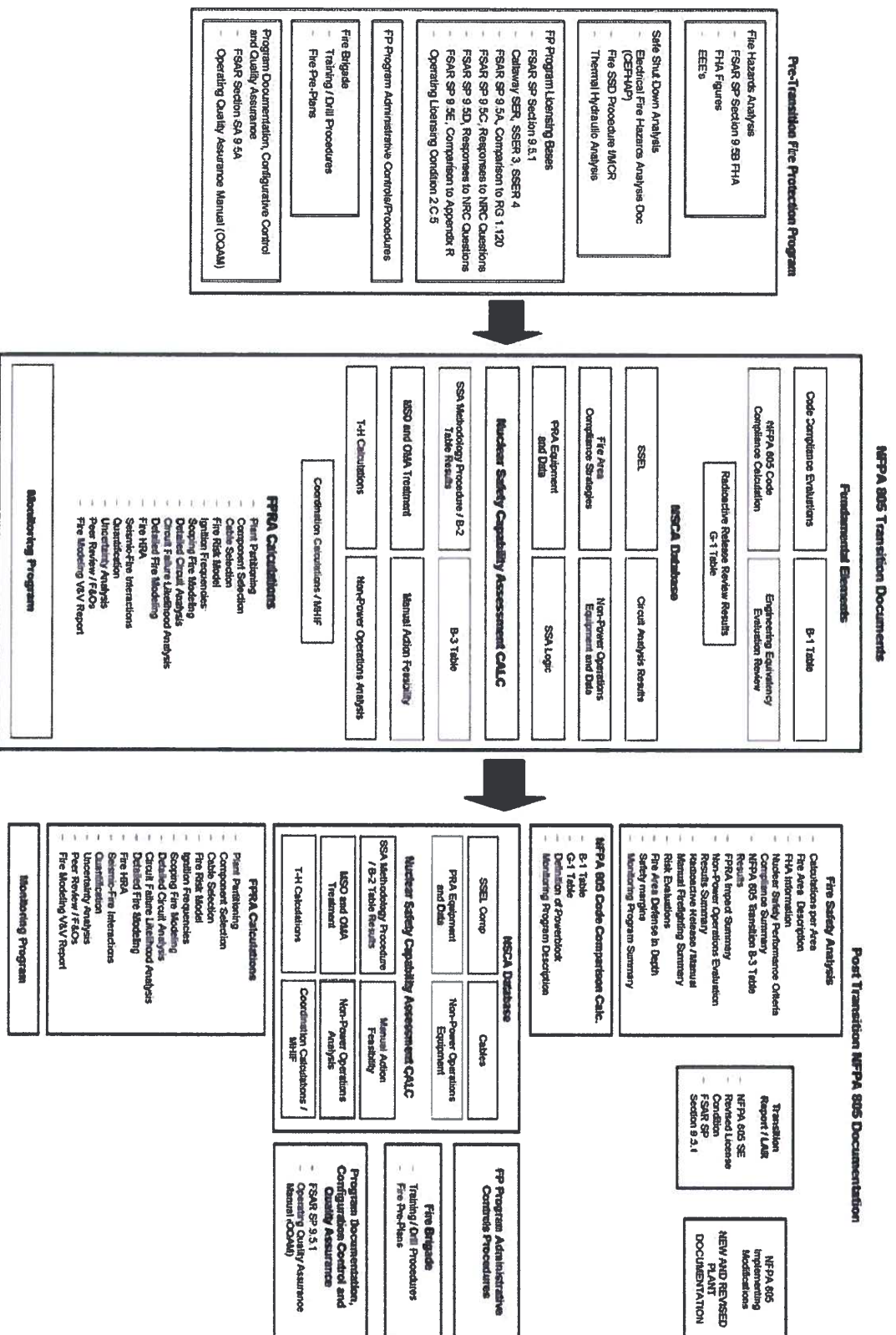


Figure 4-8 – NFPA 805 Planned Post-Transition Documents and Relationships

#### 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) is subject to Ameren Missouri 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 fire protection program are reviewed appropriately. The RI-PB post transition change process methodology is 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 (Appendix 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

The Plant Change Evaluation Process consists of the following 4 steps and is depicted in Figure 4-9:

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

#### Change Definition

The 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).

1. 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).
2. 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 is then performed to identify and resolve minor changes to the fire protection program. This screening is consistent with fire protection regulatory review processes in place at nuclear plants under traditional licensing bases. This screening process is 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.

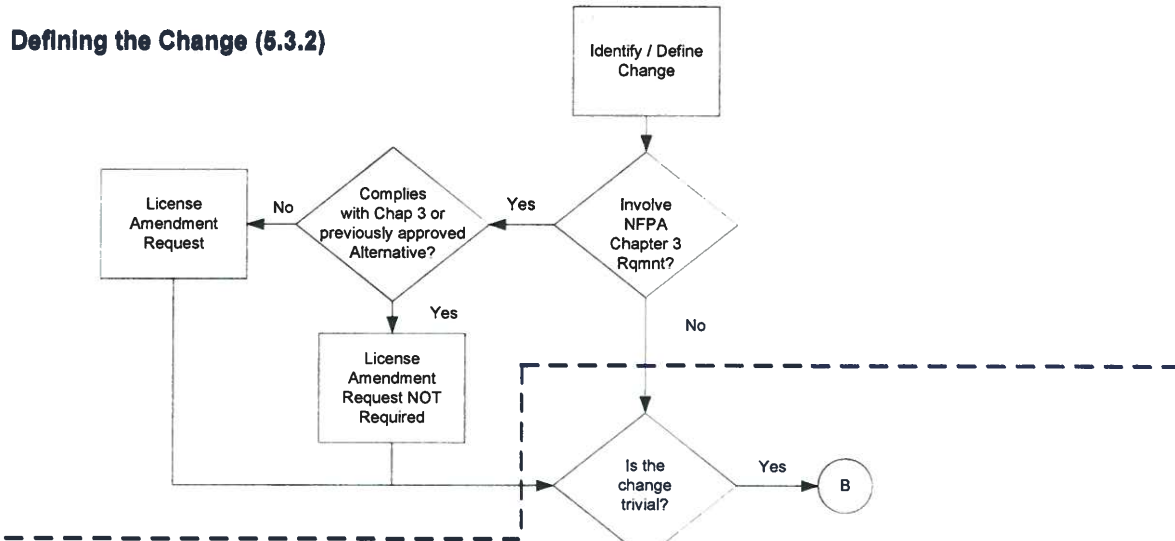
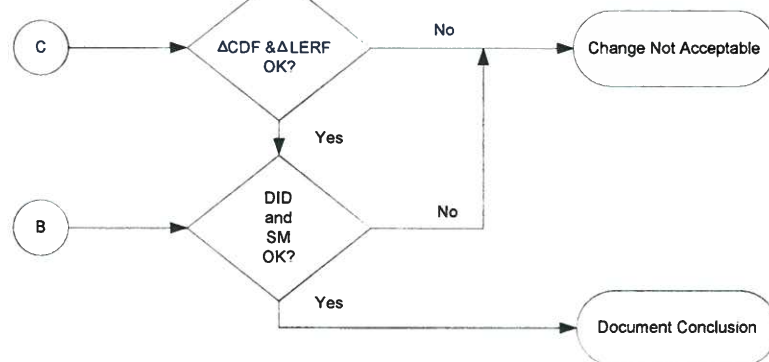
### **Risk Evaluation**

The screening is followed by engineering evaluations that may include fire modeling and risk assessment techniques. The results of these evaluations are then compared to the acceptance criteria. Changes that satisfy the acceptance criteria of NFPA 805 Section 2.4.4 and the license condition 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 require that the resultant change in CDF and LERF be consistent with the license condition. The acceptance criteria also include consideration of defense-in-depth and safety margin, which would typically be qualitative in nature.

The risk evaluation involves 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 could 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 Change Evaluations are assessed for acceptability using the  $\Delta$ CDF and  $\Delta$ LERF criteria from the license condition. The proposed changes are also assessed to ensure they are consistent with the defense-in-depth philosophy and that sufficient safety margins were maintained.

**Defining the Change (5.3.2)****Preliminary Risk Screening (5.3.3)****Risk Evaluation (5.3.4)****PRA Capability Category Assessment****Acceptance Criteria (5.3.5)**

**Figure 4-9 Plant Change Evaluation [NEI 04-02 Figure 5-1]**  
 Note references in Figure refer to NEI 04-02 Sections

The Callaway Plant Fire Protection Program configuration is defined by the program documentation. To the greatest extent possible, the existing configuration control processes for modifications, calculations and analyses, and Fire Protection Program License Basis Reviews will be utilized to maintain configuration control of the Fire Protection program documents. The configuration control procedures which govern the various Callaway Plant 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 NSCA Treatment, 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. The development of new control procedures and processes for new documents and databases created as a result of the transition to NFPA 805 will be completed as part of LAR implementation. (See Attachment S.)

The process for capturing the impact of proposed changes to the plant on the Fire Protection Program will continue to be a multiple step review. The first step of the review is an initial screening for process users to determine if there is a potential to impact the Fire Protection program 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 Fire Protection program impacts will be sent to qualified individuals (Fire Protection, Safe Shutdown/NSCA, and/or Fire PRA) to ascertain the program impacts, if any. If Fire Protection program 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 Callaway Plant NFPA 805 fire protection license condition to assess the acceptability of the proposed change. This process would 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 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**

###### Current QA Program

The existing Callaway Plant Fire Protection QA program requirements are contained in the following documents;

- FSAR Standard Plant (FSAR SP) Section 3.2.4,
- FSAR SP Appendix 9.5A, "Design Comparison to Regulatory Positions of Regulatory Guide 1.120, Revision 1, dated November 1977, Titled "Fire Protection Guidelines for Nuclear Power Plants,"
- FSAR Site Addendum (FSAR SA) Appendix 9.5A, "Fire Protection Evaluation," and
- Operating Quality Assurance Manual (OQAM).

### QA Program Utilized During Transition

During the transition to 10 CFR 50.48(c), Callaway Plant performed work in accordance with the quality requirements of Section 2.7.3 of NFPA 805 and the existing FP QA Program described above. This included requirements that each analysis, calculation, or evaluation performed to support compliance with 10 CFR 50.48(c) be independently reviewed.

### Post Transition QA Program

Callaway Plant will utilize the existing Fire Protection Quality Assurance program with the following changes.

- For the post NFPA 805 Transition, the FP QA Program requirements will be consolidated within FSAR SP Sections 3.2.4 and 9.5.1 and the OQAM.
- In addition to editorial and administrative changes (i.e. replacing references to previous NRC guidelines with those associated with the NFPA 805 transition and ensuring the features required for a performance based program under NFPA 805 are addressed), the components and systems currently considered within the scope of the Fire Protection QA Program will be expanded to include those components and systems that are in the power block and are required by Chapter 4 of NFPA 805. This means that certain FP systems and features in some buildings not currently considered under the FP QA Program that are required by NFPA 805 Chapter 4 will now fall under the Fire Protection QA program. As such, any future modifications to these systems will be conducted under the design controls required by the FP QA program.
- The FP QA Program includes a requirement to conduct independent audits of the FP Program by the Nuclear Oversight Department to ensure that the requirements of the fire protection program are being effectively implemented. The audit requirements contained in OQAM Section 18.8.e will be revised to include the periodic review of the Monitoring Program.

### **Fire PRA Quality**

Configuration control of the Fire PRA model will be maintained by integrating the Fire PRA model into existing procedure APA-ZZ-00312, "Probabilistic Risk Assessment (PRA)", used to ensure configuration control of the internal events PRA model. This process complies with Section 5 of the ASME Standard for PRA Quality and ensures that Ameren Missouri 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 10 CFR 50 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, the procedure which addresses software controls for 10 CFR 50 Appendix B is applied to the PRA model software, as well.

With respect to Quality Assurance Program requirements for independent reviews of calculations and evaluations, those existing requirements for Fire Protection Program documents will remain unchanged. Ameren Missouri specifically requires that the calculations and evaluations in support of the NFPA 805 LAR, exclusive of the Fire PRA, be performed



within the scope of the QA program which requires independent review as defined by Ameren Missouri procedures.

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 with Callaway Plant Fire PRA Uncertainty and Sensitivity Analyses report, 17671-014. In addition, sensitivity to uncertainty associated with specific Fire PRA parameters was quantitatively addressed in this report.

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 Ameren Missouri continues to strive toward 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) are performed in accordance with Ameren Missouri's 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) are used and 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 use and apply 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 fire modeling or Fire PRA development and evaluation, Ameren Missouri will develop and maintain qualification requirements for individuals assigned various tasks. Qualification Standards 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. These qualification requirements and guides will be developed as described in the associated implementation item in 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. This is of particular interest in fire modeling and Fire PRA development.

## 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:

- 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 Fire Protection System / Feature: Detection / suppression required in the Fire Area based on NFPA 805 Chapter 4 compliance. Other Required Features may include Electrical Raceway Fire Barrier Systems, fire barriers, etc. The documentation of required fire protection systems and features does not include the documentation of the fire area boundaries. Fire area boundaries are required and documentation of the fire area boundaries has been performed as part of reviews of engineering evaluations, licensing actions, or as part of the reviews of the NEI 04-02 Table B-1 process. The information is provided on a fire zone basis. The basis for the requirement of the fire protection system / feature is designated as follows:
  - S – Separation Criteria: Systems/Features required for Chapter 4 Separation Criteria in Section 4.2.3
  - L – Licensing Action Criteria: Systems/Features required for acceptability of NRC approved Licensing Actions (i.e., Exemptions/Deviation/Safety Evaluations) (Section 2.2.7)
  - E – EEEE Criteria: Systems/Features required for acceptability of Existing Engineering Equivalency Evaluations (Section 2.2.7)
  - R – Risk Criteria: Systems/Features required to meet the Risk Criteria for the Performance-Based Approach (Section 4.2.4)
  - D – Defense-in-depth Criteria: Systems/Features required to maintain adequate balance of Defense-in-Depth for a Performance-Based Approach (Section 4.2.4)

Attachment W contains the results of the Fire Risk Evaluations, additional risk of recovery actions, and the change in risk on a fire area basis.

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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
<b>A-1</b>		<b>Auxiliary Building - El. 1974, 1988</b>	<b>4.2.4.2</b>									
A-1	1101	General Floor Area No. 1		Detection	100	Ionization	Y	N	N	N	N	
A-1	1101	General Floor Area No. 1		Suppression	SKC43	Pre-action	Y	N	N	N	N	
A-1	1101	General Floor Area No. 1		Feature	None	ERFBS	Y	N	N	N	N	
A-1	1102	Chiller and Surge Tanks Area		Detection	101	Ionization	Y	N	N	N	N	
A-1	1102	Chiller and Surge Tanks Area		Detection	100	Ionization	Y	N	N	N	N	
A-1	1102	Chiller and Surge Tanks Area		Suppression	SKC43	Pre-action	Y	N	N	N	N	
A-1	1102	Chiller and Surge Tanks Area		Feature	None	N/A	—	—	—	—	—	
A-1	1103	Letdown Chiller Heat Exchanger Room		Detection	None	N/A	—	—	—	—	—	
A-1	1103	Letdown Chiller Heat Exchanger Room		Suppression	None	N/A	—	—	—	—	—	
A-1	1103	Letdown Chiller Heat Exchanger Room		Feature	None	N/A	—	—	—	—	—	
A-1	1104	Letdown Reheat Heat Exchanger Room		Detection	None	N/A	—	—	—	—	—	
A-1	1104	Letdown Reheat Heat Exchanger Room		Suppression	None	N/A	—	—	—	—	—	
A-1	1104	Letdown Reheat Heat Exchanger Room		Feature	None	N/A	—	—	—	—	—	
A-1	1105	Valve Compartment		Detection	None	N/A	—	—	—	—	—	
A-1	1105	Valve Compartment		Suppression	None	N/A	—	—	—	—	—	
A-1	1105	Valve Compartment		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
A-1	1106	Moderating Heat Exchanger Room		Detection	None	N/A	—	—	—	—	—	
A-1	1106	Moderating Heat Exchanger Room		Suppression	None	N/A	—	—	—	—	—	
A-1	1106	Moderating Heat Exchanger Room		Feature	None	N/A	—	—	—	—	—	
A-1	1115	Normal Charging Pump Room		Detection	101	Ionization	N	N	N	N	N	
A-1	1115	Normal Charging Pump Room		Suppression	None	N/A	—	—	—	—	—	
A-1	1115	Normal Charging Pump Room		Feature	None	N/A	—	—	—	—	—	
A-1	1120	General Floor Area No. 2		Detection	101	Ionization	N	N	N	N	N	
A-1	1120	General Floor Area No. 2		Detection	102	Ionization	N	N	N	N	N	
A-1	1120	General Floor Area No. 2		Suppression	SKC43	Pre-action	Y	Y	N	N	N	provides water curtain for hatch
A-1	1120	General Floor Area No. 2		Feature	None	N/A	—	—	—	—	—	
A-1	1121	Access Pit		Detection	101	Ionization	N	N	N	N	N	
A-1	1121	Access Pit		Suppression	None	N/A	—	—	—	—	—	
A-1	1121	Access Pit		Feature	None	N/A	—	—	—	—	—	
A-1	1122	General Floor Area No. 3 & Auxiliary Building Tool Issue Area		Detection	100	Ionization	Y	Y	N	N	N	activates hatch water curtain
A-1	1122	General Floor Area No. 3 & Auxiliary Building Tool Issue Area		Detection	101	Ionization	N	N	N	N	N	
A-1	1122	General Floor Area No. 3 & Auxiliary Building Tool Issue Area		Suppression	SKC43	Pre-action	Y	Y	N	N	N	provides water curtain for hatch

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
A-1	1122	General Floor Area No. 3 & Auxiliary Building Tool Issue Area		Feature	None	N/A	—	—	—	—	—	
A-1	1123	Passage		Detection	None	N/A	—	—	—	—	—	
A-1	1123	Passage		Suppression	None	N/A	—	—	—	—	—	
A-1	1123	Passage		Feature	None	N/A	—	—	—	—	—	
A-1	1124	Valve Compartment		Detection	None	N/A	—	—	—	—	—	
A-1	1124	Valve Compartment		Suppression	None	N/A	—	—	—	—	—	
A-1	1124	Valve Compartment		Feature	None	N/A	—	—	—	—	—	
A-1	1125	Letdown Heat Exchanger Room		Detection	None	N/A	—	—	—	—	—	
A-1	1125	Letdown Heat Exchanger Room		Suppression	None	N/A	—	—	—	—	—	
A-1	1125	Letdown Heat Exchanger Room		Feature	None	N/A	—	—	—	—	—	
A-1	1128	Storeroom No. 3		Detection	117	Ionization	N	N	N	N	N	
A-1	1128	Storeroom No. 3		Suppression	None	N/A	—	—	—	—	—	
A-1	1128	Storeroom No. 3		Feature	None	N/A	—	—	—	—	—	
A-1	1129	Auxiliary Condenser Recovery and Storage Tank Room		Detection	None	N/A	—	—	—	—	—	
A-1	1129	Auxiliary Condenser Recovery and Storage Tank Room		Suppression	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
A-1	1129	Auxiliary Condenser Recovery and Storage Tank Room		Feature	None	N/A	—	—	—	—	—	
A-1	1130	North Corridor		Detection	100	Ionization	N	Y	N	N	N	
A-1	1130	North Corridor		Suppression	SKC43	Pre-action	Y	N	N	N	N	
A-1	1130	North Corridor		Feature	None	N/A	—	—	—	—	—	
A-1	1201	Vestibule		Detection	102	Ionization	N	N	N	N	N	
A-1	1201	Vestibule		Suppression	None	N/A	—	—	—	—	—	
A-1	1201	Vestibule		Feature	None	N/A	—	—	—	—	—	
A-1	1202	Access Area 'B' & Chiller Surge Tank Area		Detection	None	N/A	—	—	—	—	—	
A-1	1202	Access Area 'B' & Chiller Surge Tank Area		Suppression	None	N/A	—	—	—	—	—	
A-1	1202	Access Area 'B' & Chiller Surge Tank Area		Feature	None	N/A	—	—	—	—	—	
A-1	1203	Pipe Space 'B'		Detection	None	N/A	—	—	—	—	—	
A-1	1203	Pipe Space 'B'		Suppression	None	N/A	—	—	—	—	—	
A-1	1203	Pipe Space 'B'		Feature	None	N/A	—	—	—	—	—	
A-1	1204	Pipe Space 'A'		Detection	None	N/A	—	—	—	—	—	
A-1	1204	Pipe Space 'A'		Suppression	None	N/A	—	—	—	—	—	
A-1	1204	Pipe Space 'A'		Feature	None	N/A	—	—	—	—	—	
A-1	1205	Access Area 'A'		Detection	None	N/A	—	—	—	—	—	



**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
A-1	1205	Access Area 'A'		Suppression	None	N/A	—	—	—	—	—	
A-1	1205	Access Area 'A'		Feature	None	N/A	—	—	—	—	—	
A-1	1206	Pipe Chase		Detection	120	Ionization	N	N	N	N	N	
A-1	1206	Pipe Chase		Suppression	SKC48	Wet Pipe	Y	N	N	N	N	
A-1	1206	Pipe Chase		Feature	None	ERFBS	Y	N	N	N	N	
A-1	1207	Pipe Chase		Detection	120	Ionization	N	N	N	N	N	
A-1	1207	Pipe Chase		Suppression	SKC48	Wet Pipe	Y	N	N	N	N	
A-1	1207	Pipe Chase		Feature	None	ERFBS	Y	N	N	N	N	
A-1	1329	Vestibule		Detection	None	N/A	—	—	—	—	—	
A-1	1329	Vestibule		Suppression	None	N/A	—	—	—	—	—	
A-1	1329	Vestibule		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
<b>A-2</b>		<b>Auxiliary Building Safety-Related Pump Area</b>	<b>4.2.3.2</b>									
A-2	1111	Residual Heat Removal Pump Room 'A'		Detection	101	Ionization	N	N	N	Y	N	
A-2	1111	Residual Heat Removal Pump Room 'A'		Suppression	None	N/A	—	—	—	—	—	
A-2	1111	Residual Heat Removal Pump Room 'A'		Feature	None	N/A	—	—	—	—	—	
A-2	1112	Containment Spray Pump Room 'A'		Detection	101	Ionization	N	N	N	Y	N	
A-2	1112	Containment Spray Pump Room 'A'		Suppression	None	N/A	—	—	—	—	—	
A-2	1112	Containment Spray Pump Room 'A'		Feature	None	N/A	—	—	—	—	—	
A-2	1113	Safety Injection Pump Room 'A'		Detection	101	Ionization	N	N	N	Y	N	
A-2	1113	Safety Injection Pump Room 'A'		Suppression	None	N/A	—	—	—	—	—	
A-2	1113	Safety Injection Pump Room 'A'		Feature	None	N/A	—	—	—	—	—	
A-2	1114	Centrifugal Charging Pump Room 'A'		Detection	101	Ionization	N	N	N	Y	N	
A-2	1114	Centrifugal Charging Pump Room 'A'		Suppression	None	N/A	—	—	—	—	—	
A-2	1114	Centrifugal Charging Pump Room 'A'		Feature	None	N/A	—	—	—	—	—	



**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
<b>A-3</b>		<b>Boric Acid Tank Rooms</b>	<b>4.2.3.2</b>									
A-3	1116	Boric Acid Tank Room 'B'		Detection	101	Ionization	N	N	N	N	N	
A-3	1116	Boric Acid Tank Room 'B'		Detection	101	Flame	N	N	N	N	N	
A-3	1116	Boric Acid Tank Room 'B'		Suppression	None	N/A	—	—	—	—	—	
A-3	1116	Boric Acid Tank Room 'B'		Feature	None	N/A	—	—	—	—	—	
A-3	1117	Boric Acid Tank Room 'A'		Detection	101	Ionization	N	N	N	N	N	
A-3	1117	Boric Acid Tank Room 'A'		Detection	101	Flame	N	N	N	N	N	
A-3	1117	Boric Acid Tank Room 'A'		Suppression	None	N/A	—	—	—	—	—	
A-3	1117	Boric Acid Tank Room 'A'		Feature	None	N/A	—	—	—	—	—	
A-3	1407	Boric Acid Batching Tank Area		Detection	None	N/A	—	—	—	—	—	
A-3	1407	Boric Acid Batching Tank Area		Suppression	None	N/A	—	—	—	—	—	
A-3	1407	Boric Acid Batching Tank Area		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
<b>A-4</b>		<b>Auxiliary Building Safety-Related Pump Area</b>	<b>4.2.3.2</b>									
A-4	1107	Centrifugal Charging Pump Room 'B'		Detection	101	Ionization	N	N	N	Y	N	
A-4	1107	Centrifugal Charging Pump Room 'B'		Suppression	None	N/A	—	—	—	—	—	
A-4	1107	Centrifugal Charging Pump Room 'B'		Feature	None	N/A	—	—	—	—	—	
A-4	1108	Safety Injection Pump Room 'B'		Detection	101	Ionization	N	N	N	Y	N	
A-4	1108	Safety Injection Pump Room 'B'		Suppression	None	N/A	—	—	—	—	—	
A-4	1108	Safety Injection Pump Room 'B'		Feature	None	N/A	—	—	—	—	—	
A-4	1109	Residual Heat Removal Pump Room 'B'		Detection	101	Ionization	N	N	N	Y	N	
A-4	1109	Residual Heat Removal Pump Room 'B'		Suppression	None	N/A	—	—	—	—	—	
A-4	1109	Residual Heat Removal Pump Room 'B'		Feature	None	N/A	—	—	—	—	—	
A-4	1110	Containment Spray Pump Room 'B'		Detection	101	Ionization	N	N	N	Y	N	
A-4	1110	Containment Spray Pump Room 'B'		Suppression	None	N/A	—	—	—	—	—	
A-4	1110	Containment Spray Pump Room 'B'		Feature	None	N/A	—	—	—	—	—	

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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
A-5		Auxiliary Building Stairway and Elevator (south)	4.2.3.2									
A-5	1119	Stair A-1		Detection	108	Ionization	N	N	N	N	N	
A-5	1119	Stair A-1		Suppression	None	N/A	—	—	—	—	—	
A-5	1119	Stair A-1		Feature	None	N/A	—	—	—	—	—	
A-5	1601	Elevator No. 2 Machine Room		Detection	None	Ionization	N	N	N	N	N	
A-5	1601	Elevator No. 2 Machine Room		Suppression	None	N/A	—	—	—	—	—	
A-5	1601	Elevator No. 2 Machine Room		Feature	None	N/A	—	—	—	—	—	
A-5	Elevator Lobby	Location is not a plant fire zone. See note.		Detection	102	Ionization	N	N	N	N	N	the elevator lobby is specified for location purposes only
A-5	Elevator Lobby	Location is not a plant fire zone. See note.		Feature	None	N/A	—	—	—	—	—	the elevator lobby is specified for location purposes only
A-6		Auxiliary Building Stairway (North)	4.2.4.2									
A-6	1127	Auxiliary Building Stairway (North)		Detection	109	Ionization	N	N	N	N	N	
A-6	1127	Auxiliary Building Stairway (North)		Suppression	None	N/A	—	—	—	—	—	
A-6	1127	Auxiliary Building Stairway (North)		Feature	None	ERFBS	N	N	N	N	Y	
A-7		Boron Injection Room	4.2.3.2									
A-7	1126	Boron Injection Tank and Pump Room		Detection	101	Ionization	N	N	N	N	N	
A-7	1126	Boron Injection Tank and Pump Room		Suppression	None	N/A	—	—	—	—	—	
A-7	1126	Boron Injection Tank and Pump Room		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
<b>A-8</b>		<b>Auxiliary Building - El. 2000, General Area</b>	<b>4.2.4.2</b>									
A-8	1301	Corridor No. 1		Detection	117	Ionization	N	N	N	N	N	
A-8	1301	Corridor No. 1		Detection	103	Ionization	N	Y	N	N	N	
A-8	1301	Corridor No. 1		Suppression	SKC44	Pre-action	N	Y	N	N	N	
A-8	1301	Corridor No. 1		Feature	None	N/A	—	—	—	—	—	
A-8	1302	Filter Compartments		Detection	None	N/A	—	—	—	—	—	
A-8	1302	Filter Compartments		Suppression	None	N/A	—	—	—	—	—	
A-8	1302	Filter Compartments		Feature	None	N/A	—	—	—	—	—	
A-8	1306	Valve Compartments		Detection	None	N/A	—	—	—	—	—	
A-8	1306	Valve Compartments		Suppression	None	N/A	—	—	—	—	—	
A-8	1306	Valve Compartments		Feature	None	N/A	—	—	—	—	—	
A-8	1307	Corridor No. 2		Detection	None	N/A	—	—	—	—	—	
A-8	1307	Corridor No. 2		Suppression	None	N/A	—	—	—	—	—	
A-8	1307	Corridor No. 2		Feature	None	N/A	—	—	—	—	—	
A-8	1308	Valve Compartments		Detection	None	N/A	—	—	—	—	—	
A-8	1308	Valve Compartments		Suppression	None	N/A	—	—	—	—	—	
A-8	1308	Valve Compartments		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
A-8	1311	Auxiliary Building Sampling Room		Detection	117	Ionization	N	N	N	N	N	
A-8	1311	Auxiliary Building Sampling Room		Suppression	None	N/A	—	—	—	—	—	
A-8	1311	Auxiliary Building Sampling Room		Feature	None	N/A	—	—	—	—	—	
A-8	1312	Boron Meter & RC Activity Monitor Room		Detection	103	Ionization	N	Y	N	N	N	
A-8	1312	Boron Meter & RC Activity Monitor Room		Suppression	SKC44	Pre-action	N	Y	N	N	N	
A-8	1312	Boron Meter & RC Activity Monitor Room		Feature	None	N/A	—	—	—	—	—	
A-8	1313	Volume Control Tank Room		Detection	None	N/A	—	—	—	—	—	
A-8	1313	Volume Control Tank Room		Suppression	None	N/A	—	—	—	—	—	
A-8	1313	Volume Control Tank Room		Feature	None	N/A	—	—	—	—	—	
A-8	1314	Corridor No. 3		Detection	103	Ionization	Y	Y	Y	N	N	activates hatch water curtain
A-8	1314	Corridor No. 3		Detection	117	Ionization	N	N	N	N	N	
A-8	1314	Corridor No. 3		Suppression	SKC44	Pre-action	Y	Y	Y	N	N	provides water curtain for hatch
A-8	1314	Corridor No. 3		Feature	None	N/A	—	—	—	—	—	
A-8	1315	Containment Spray Additive Tank Area		Detection	103	Ionization	N	Y	N	N	N	
A-8	1315	Containment Spray Additive Tank Area		Detection	117	Ionization	N	N	N	N	N	
A-8	1315	Containment Spray Additive Tank Area		Suppression	None	N/A	—	—	—	—	—	
A-8	1315	Containment Spray Additive Tank Area		Feature	None	N/A	—	—	—	—	—	



**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
A-8	1316	Valve Compartment		Detection	103	Ionization	N	Y	N	N	N	
A-8	1316	Valve Compartment		Suppression	SKC44	Pre-action	N	Y	N	N	N	
A-8	1316	Valve Compartment		Feature	None	N/A	—	—	—	—	—	
A-8	1317	Seal Water Heat Exchanger Room		Detection	103	Ionization	N	Y	N	N	N	
A-8	1317	Seal Water Heat Exchanger Room		Suppression	SKC44	Pre-action	N	Y	N	N	N	
A-8	1317	Seal Water Heat Exchanger Room		Feature	None	N/A	—	—	—	—	—	
A-8	1318	Valve Compartment		Detection	None	N/A	—	—	—	—	—	
A-8	1318	Valve Compartment		Suppression	None	N/A	—	—	—	—	—	
A-8	1318	Valve Compartment		Feature	None	N/A	—	—	—	—	—	
A-8	1319	Demineralizer Compartments		Detection	None	N/A	—	—	—	—	—	
A-8	1319	Demineralizer Compartments		Suppression	None	N/A	—	—	—	—	—	
A-8	1319	Demineralizer Compartments		Feature	None	N/A	—	—	—	—	—	
A-8	1320	Corridor No. 4		Detection	103	Ionization	Y	Y	N	N	N	activates hatch water curtain
A-8	1320	Corridor No. 4		Suppression	SKC44	Pre-action	Y	Y	N	N	N	provides water curtain for hatch
A-8	1320	Corridor No. 4		Feature	None	N/A	—	—	—	—	—	
A-8	1321	Exit Vestibule		Detection	103	Ionization	N	Y	N	N	N	
A-8	1321	Exit Vestibule		Detection	102	Ionization	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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
A-8	1321	Exit Vestibule		Suppression	SKC44	Pre-action	N	Y	N	N	N	
A-8	1321	Exit Vestibule		Feature	None	N/A	—	—	—	—	—	
<b>A-9 RHR Heat Exchanger Room 4.2.3.2</b>												
A-9	1309	Residual Heat Removal Heat Exchanger Room 'B'		Detection	None	N/A	—	—	—	—	—	
A-9	1309	Residual Heat Removal Heat Exchanger Room 'B'		Suppression	None	N/A	—	—	—	—	—	
A-9	1309	Residual Heat Removal Heat Exchanger Room 'B'		Feature	None	N/A	—	—	—	—	—	
<b>A-10 RHR Heat Exchanger Room 4.2.3.2</b>												
A-10	1310	Residual Heat Removal Heat Exchanger Room 'A'		Detection	None	N/A	—	—	—	—	—	
A-10	1310	Residual Heat Removal Heat Exchanger Room 'A'		Suppression	None	N/A	—	—	—	—	—	
A-10	1310	Residual Heat Removal Heat Exchanger Room 'A'		Feature	None	N/A	—	—	—	—	—	
<b>A-11 Cable Chase, Auxiliary Building - El. 2000 4.2.4.2</b>												
A-11	1335	Cable Chase		Detection	117	Ionization	N	N	N	N	N	
A-11	1335	Cable Chase		Suppression	SKC35	Wet Pipe	N	N	N	Y	N	
A-11	1335	Cable Chase		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
A-12		Auxiliary Building Cable Chase B, Auxiliary Building - El. 2000	4.2.3.2									
A-12	1336	Electrical Chase		Detection	117	Ionization	N	N	N	N	N	
A-12	1336	Electrical Chase		Suppression	SKC36	Wet Pipe	N	N	N	N	N	
A-12	1336	Electrical Chase		Feature	None	N/A	—	—	—	—	—	
A-13		Auxiliary Feedwater Pump Room B	4.2.4.2									
A-13	1325	Auxiliary Feedwater Pump Room 'B'		Detection	120	Ionization	N	N	N	Y	N	
A-13	1325	Auxiliary Feedwater Pump Room 'B'		Suppression	None	N/A	—	—	—	—	—	
A-13	1325	Auxiliary Feedwater Pump Room 'B'		Feature	None	N/A	—	—	—	—	—	
A-14		Auxiliary Feedwater Pump Room A	4.2.3.2									
A-14	1326	Auxiliary Feedwater Pump Room 'A'		Detection	120	Ionization	N	N	N	N	N	
A-14	1326	Auxiliary Feedwater Pump Room 'A'		Suppression	None	N/A	—	—	—	—	—	
A-14	1326	Auxiliary Feedwater Pump Room 'A'		Feature	None	N/A	—	—	—	—	—	



**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
A-15		<b>Turbine Driven Auxiliary Feedwater Pump Room</b>	<b>4.2.4.2</b>									
A-15	1331	Auxiliary Feedwater Pump Room 'C'		Detection	120	Ionization	N	N	N	N	N	
A-15	1331	Auxiliary Feedwater Pump Room 'C'		Detection	111	Thermal	N	N	N	Y	N	
A-15	1331	Auxiliary Feedwater Pump Room 'C'		Suppression	SKC22	Manual Spray	N	N	N	N	N	for the TDAFP
A-15	1331	Auxiliary Feedwater Pump Room 'C'		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
A-16 Auxiliary Building El. 2026, General Area 4.2.4.2												
A-16	1401	Component Cooling Water Pump & Heat Exchanger Area 'B'		Detection	118	Ionization	N	N	N	Y	N	
A-16	1401	Component Cooling Water Pump & Heat Exchanger Area 'B'		Suppression	None	N/A	—	—	—	—	—	
A-16	1401	Component Cooling Water Pump & Heat Exchanger Area 'B'		Feature	None	N/A	—	—	—	—	—	
A-16	1402	Corridor No. 1		Detection	104	Ionization	Y	Y	N	Y	N	
A-16	1402	Corridor No. 1		Suppression	SKC45	Pre-action	Y	Y	N	N	N	
A-16	1402	Corridor No. 1		Feature	None	N/A	—	—	—	—	—	
A-16	1406	Component Cooling Water Pump & Heat Exchanger Area 'A'		Detection	118	Ionization	N	N	N	Y	N	
A-16	1406	Component Cooling Water Pump & Heat Exchanger Area 'A'		Suppression	None	N/A	—	—	—	—	—	
A-16	1406	Component Cooling Water Pump & Heat Exchanger Area 'A'		Feature	None	N/A	—	—	—	—	—	
A-16	1408	Corridor No. 2		Detection	102	Ionization	N	N	N	N	N	
A-16	1408	Corridor No. 2		Detection	118	Ionization	N	N	N	Y	N	
A-16	1408	Corridor No. 2		Detection	104	Ionization	Y	Y	Y	Y	N	activates hatch water curtain
A-16	1408	Corridor No. 2		Suppression	SKC45	Pre-action	Y	Y	Y	Y	N	provides water curtain for hatches

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
A-16	1408	Corridor No. 2		Feature	None	ERFBS	Y	N	N	Y	N	cable tray covers w/seals
<b>A-17</b>		<b>Electrical Penetration Room B</b>	<b>4.2.4.2</b>									
A-17	1409	Electrical Penetration Room 'B'		Detection	106	Ionization	N	N	N	Y	N	
A-17	1409	Electrical Penetration Room 'B'		Detection	113	Ionization	N	N	N	Y	N	
A-17	1409	Electrical Penetration Room 'B'		Suppression	SKC36	Wet Pipe	N	N	N	N	N	electrical chase area only
A-17	1409	Electrical Penetration Room 'B'		Suppression	SKC04	Halon	N	N	N	Y	N	
A-17	1409	Electrical Penetration Room 'B'		Feature	None	N/A	—	—	—	—	—	
<b>A-18</b>		<b>Electrical Penetration Room A</b>	<b>4.2.4.2</b>									
A-18	1410	Electrical Penetration Room 'A'		Detection	107	Ionization	Y	N	N	Y	N	
A-18	1410	Electrical Penetration Room 'A'		Detection	114	Ionization	Y	N	N	Y	N	
A-18	1410	Electrical Penetration Room 'A'		Suppression	SKC05	Halon	Y	N	N	Y	N	
A-18	1410	Electrical Penetration Room 'A'		Suppression	SKC35	Wet Pipe	Y	N	N	N	N	electrical chase area only
A-18	1410	Electrical Penetration Room 'A'		Feature	None	ERFBS	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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
<b>A-19</b>		<b>Auxiliary Building El. 2047, General Area</b>	<b>4.2.4.2</b>									
A-19	1504	Containment Purge Exhaust and Mechanical Equipment Room 'B'		Detection	108	Ionization	N	N	N	N	N	
A-19	1504	Containment Purge Exhaust and Mechanical Equipment Room 'B'		Suppression	None	N/A	—	—	—	—	—	
A-19	1504	Containment Purge Exhaust and Mechanical Equipment Room 'B'		Feature	None	N/A	—	—	—	—	—	
A-19	1506	Containment Purge Supply Air Handling Unit Room No. 'A'		Detection	109	Ionization	N	N	N	N	N	
A-19	1506	Containment Purge Supply Air Handling Unit Room No. 'A'		Suppression	None	N/A	—	—	—	—	—	
A-19	1506	Containment Purge Supply Air Handling Unit Room No. 'A'		Feature	None	N/A	—	—	—	—	—	
A-19	1513	Control Bldg. Vent Supply A/C Unit Room		Detection	109	Ionization	N	N	N	N	N	
A-19	1513	Control Bldg. Vent Supply A/C Unit Room		Suppression	None	N/A	—	—	—	—	—	
A-19	1513	Control Bldg. Vent Supply A/C Unit Room		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
A-20		Personnel Hatch and CCW Surge Tank Area	4.2.3.2									
A-20	1502	Component Cooling Water Surge Tank No. 'B'		Detection	102	Ionization	N	N	N	N	N	
A-20	1502	Component Cooling Water Surge Tank No. 'B'		Suppression	None	N/A	—	—	—	—	—	
A-20	1502	Component Cooling Water Surge Tank No. 'B'		Feature	None	N/A	—	—	—	—	—	
A-20	1503	Component Cooling Water Surge Tank No. 'A'		Detection	None	N/A	—	—	—	—	—	
A-20	1503	Component Cooling Water Surge Tank No. 'A'		Suppression	None	N/A	—	—	—	—	—	
A-20	1503	Component Cooling Water Surge Tank No. 'A'		Feature	None	N/A	—	—	—	—	—	
A-20	1505	Corridor		Detection	108	Ionization	N	N	N	N	N	
A-20	1505	Corridor		Suppression	None	N/A	—	—	—	—	—	
A-20	1505	Corridor		Feature	None	N/A	—	—	—	—	—	
A-20	1507	Personnel Hatch Area		Detection	108	Ionization	N	N	N	N	N	
A-20	1507	Personnel Hatch Area		Suppression	None	N/A	—	—	—	—	—	
A-20	1507	Personnel Hatch Area		Feature	None	N/A	—	—	—	—	—	
A-21		Control Room AC and Filtration Unit B	4.2.4.2									
A-21	1501	Control Room A/C and Filtration Units Room 'B'		Detection	110	Ionization	N	N	N	Y	N	
A-21	1501	Control Room A/C and Filtration Units Room 'B'		Suppression	None	N/A	—	—	—	—	—	
A-21	1501	Control Room A/C and Filtration Units Room 'B'		Feature	None	N/A	—	—	—	—	—	



**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
<b>A-22</b>		<b>Control Room AC and Filtration Unit A</b>	<b>4.2.4.2</b>									
A-22	1512	Control Room A/C and Filtration Units Room 'A'		Detection	110	Ionization	N	N	N	N	N	
A-22	1512	Control Room A/C and Filtration Units Room 'A'		Suppression	None	N/A	—	—	—	—	—	
A-22	1512	Control Room A/C and Filtration Units Room 'A'		Feature	None	N/A	—	—	—	—	—	
<b>A-23</b>		<b>Main Steam and Feedwater Valve Compartment</b>	<b>4.2.4.2</b>									
A-23	1411	Main Feedwater Room No. 1		Detection	None	N/A	—	—	—	—	—	
A-23	1411	Main Feedwater Room No. 1		Suppression	None	N/A	—	—	—	—	—	
A-23	1411	Main Feedwater Room No. 1		Feature	None	N/A	—	—	—	—	—	
A-23	1412	Main Feedwater Room No. 2		Detection	None	N/A	—	—	—	—	—	
A-23	1412	Main Feedwater Room No. 2		Suppression	None	N/A	—	—	—	—	—	
A-23	1412	Main Feedwater Room No. 2		Feature	None	N/A	—	—	—	—	—	
A-23	1508	Main Steam Isolation Valve Room No. 1		Detection	115	Flame	N	N	N	N	N	
A-23	1508	Main Steam Isolation Valve Room No. 1		Suppression	None	N/A	—	—	—	—	—	
A-23	1508	Main Steam Isolation Valve Room No. 1		Feature	None	N/A	—	—	—	—	—	
A-23	1509	Main Steam Isolation Valve Room No. 2		Detection	115	Flame	N	N	N	N	N	
A-23	1509	Main Steam Isolation Valve Room No. 2		Suppression	None	N/A	—	—	—	—	—	
A-23	1509	Main Steam Isolation Valve Room No. 2		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
A-24		Containment Mechanical Piping Penetration Room A	4.2.4.2									
A-24	1323	Pipe Penetration Room 'A'		Detection	117	Ionization	Y	N	N	Y	N	
A-24	1323	Pipe Penetration Room 'A'		Suppression	None	N/A	—	—	—	—	—	
A-24	1323	Pipe Penetration Room 'A'		Feature	None	ERFBS	Y	N	N	N	N	
A-25		Pipe Penetration Room B	4.2.3.2									
A-25	1322	Pipe Penetration Room 'B'		Detection	117	Ionization	N	N	N	N	N	
A-25	1322	Pipe Penetration Room 'B'		Suppression	None	N/A	—	—	—	—	—	
A-25	1322	Pipe Penetration Room 'B'		Feature	None	N/A	—	—	—	—	—	
A-26		Ops Storage/I&C Hot Shop	4.2.3.2									
A-26	1405	Ops Storage/I&C Hot Shop		Detection	118	Ionization	N	N	N	N	N	
A-26	1405	Ops Storage/I&C Hot Shop		Suppression	None	N/A	—	—	—	—	—	
A-26	1405	Ops Storage/I&C Hot Shop		Feature	None	N/A	—	—	—	—	—	
A-27		Reactor Trip Switchgear Room	4.2.4.2									
A-27	1403	Load Center and MG Sets Room		Detection	105	Ionization	Y	N	N	Y	N	
A-27	1403	Load Center and MG Sets Room		Detection	112	Ionization	Y	N	N	Y	N	
A-27	1403	Load Center and MG Sets Room		Suppression	SKC03	Halon	Y	N	N	Y	N	
A-27	1403	Load Center and MG Sets Room		Feature	None	ERFBS	Y	N	N	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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
A-28		Auxiliary Shutdown Panel Section A	4.2.4.2									
A-28	1413A	Auxiliary Shutdown Panel Room		Detection	118	Ionization	N	N	N	N	N	
A-28	1413A	Auxiliary Shutdown Panel Room		Suppression	None	N/A	—	—	—	—	—	
A-28	1413A	Auxiliary Shutdown Panel Room		Feature	None	N/A	—	—	—	—	—	
A-29		Auxiliary Feedwater Valve Compartment, SG A&D	4.2.4.2									
A-29	1304	Auxiliary Feedwater Pipe Chase		Detection	None	N/A	—	—	—	—	—	
A-29	1304	Auxiliary Feedwater Pipe Chase		Suppression	None	N/A	—	—	—	—	—	
A-29	1304	Auxiliary Feedwater Pipe Chase		Feature	None	N/A	—	—	—	—	—	
A-29	1324	Auxiliary Feedwater Pump Valve Compartment No. 1		Detection	None	N/A	—	—	—	—	—	
A-29	1324	Auxiliary Feedwater Pump Valve Compartment No. 1		Suppression	None	N/A	—	—	—	—	—	
A-29	1324	Auxiliary Feedwater Pump Valve Compartment No. 1		Feature	None	N/A	—	—	—	—	—	
A-29	1327	Auxiliary Feedwater Pump Valve Compartment No. 2		Detection	None	N/A	—	—	—	—	—	
A-29	1327	Auxiliary Feedwater Pump Valve Compartment No. 2		Suppression	None	N/A	—	—	—	—	—	
A-29	1327	Auxiliary Feedwater Pump Valve Compartment No. 2		Feature	None	N/A	—	—	—	—	—	



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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
<b>A-30</b>		<b>Auxiliary Feedwater Valve Compartment, SG B&amp;C</b>	<b>4.2.4.2</b>									
A-30	1305	Auxiliary Feedwater Pipe Chase (East)		Detection	120	Thermal	N	N	N	Y	N	
A-30	1305	Auxiliary Feedwater Pipe Chase (East)		Suppression	None	N/A	—	—	—	—	—	
A-30	1305	Auxiliary Feedwater Pipe Chase (East)		Feature	None	N/A	—	—	—	—	—	
A-30	1328	Auxiliary Feedwater Pump Valve Compartment No. 3		Detection	120	Thermal	N	N	N	Y	N	
A-30	1328	Auxiliary Feedwater Pump Valve Compartment No. 3		Suppression	None	N/A	—	—	—	—	—	
A-30	1328	Auxiliary Feedwater Pump Valve Compartment No. 3		Feature	None	N/A	—	—	—	—	—	
A-30	1330	Auxiliary Feedwater Pump Valve Compartment No. 4		Detection	None	N/A	—	—	—	—	—	
A-30	1330	Auxiliary Feedwater Pump Valve Compartment No. 4		Suppression	None	N/A	—	—	—	—	—	
A-30	1330	Auxiliary Feedwater Pump Valve Compartment No. 4		Feature	None	N/A	—	—	—	—	—	
<b>A-33</b>		<b>Auxiliary Shutdown Panel Section B</b>	<b>4.2.4.2</b>									
A-33	1413B	Auxiliary Shutdown Panel Room		Detection	118	Ionization	N	N	N	N	N	
A-33	1413B	Auxiliary Shutdown Panel Room		Suppression	None	N/A	—	—	—	—	—	
A-33	1413B	Auxiliary Shutdown Panel Room		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
AB-1		Auxiliary Boiler Room	4.2.3.2									
AB-1	4315	Auxiliary Boiler Room		Detection	406	Flame	N	N	N	N	N	
AB-1	4315	Auxiliary Boiler Room		Suppression	SKC09	Wet Pipe	N	N	N	N	N	
AB-1	4315	Auxiliary Boiler Room		Feature	None	N/A	—	—	—	—	—	
C-1		Pipe Space and Tank Area, Control Building, El. 1974	4.2.3.2									
C-1	3101	Pipe Space and Tank Area		Detection	330	Ionization	Y	N	N	N	N	
C-1	3101	Pipe Space and Tank Area		Suppression	SKC46	Wet Pipe	Y	N	N	N	N	
C-1	3101	Pipe Space and Tank Area		Feature	None	N/A	—	—	—	—	—	
C-1	3104	Pipe Space and Tank Area		Detection	None	N/A	—	—	—	—	—	
C-1	3104	Pipe Space and Tank Area		Suppression	None	N/A	—	—	—	—	—	
C-1	3104	Pipe Space and Tank Area		Feature	None	N/A	—	—	—	—	—	
C-2		Control Building North Cable Chase, Control Building, El. 1974	4.2.3.2									
C-2	3106	North Vertical Cable Chase		Detection	330	Ionization	N	N	N	N	N	
C-2	3106	North Vertical Cable Chase		Suppression	SKC37	Wet Pipe	N	N	N	N	N	
C-2	3106	North Vertical Cable Chase		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
C-3		<b>Control Building Cable Chase B, Control Building, El. 1974</b>	<b>4.2.3.2</b>									
C-3	3105	South Vertical Cable Chase		Detection	330	Ionization	N	N	N	N	N	
C-3	3105	South Vertical Cable Chase		Suppression	SKC37	Wet Pipe	N	N	N	N	N	
C-3	3105	South Vertical Cable Chase		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
<b>C-5</b>		<b>Control Building Access Control Area, Control Building, El. 1984</b>	<b>4.2.3.2</b>									
C-5	3212	Women's Locker Room		Detection	300	Ionization	N	N	N	N	N	
C-5	3212	Women's Locker Room		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-5	3212	Women's Locker Room		Feature	None	N/A	—	—	—	—	—	
C-5	3213	Women's Restroom		Detection	None	N/A	—	—	—	—	—	
C-5	3213	Women's Restroom		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-5	3213	Women's Restroom		Feature	None	N/A	—	—	—	—	—	
C-5	3214	Hall		Detection	None	N/A	—	—	—	—	—	
C-5	3214	Hall		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-5	3214	Hall		Feature	None	N/A	—	—	—	—	—	
C-5	3215	Briefing Room		Detection	300	Ionization	N	N	N	N	N	
C-5	3215	Briefing Room		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-5	3215	Briefing Room		Feature	None	N/A	—	—	—	—	—	
C-5	3216	Men's Locker Room		Detection	300	Ionization	N	N	N	N	N	
C-5	3216	Men's Locker Room		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-5	3216	Men's Locker Room		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
C-5	3217	Men's Restroom		Detection	None	N/A	—	—	—	—	—	
C-5	3217	Men's Restroom		Suppression	None	N/A	—	—	—	—	—	
C-5	3217	Men's Restroom		Feature	None	N/A	—	—	—	—	—	
C-5	3218	RWP Sign-In/Sign-Out Area		Detection	300	Ionization	N	N	N	N	N	
C-5	3218	RWP Sign-In/Sign-Out Area		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-5	3218	RWP Sign-In/Sign-Out Area		Feature	None	N/A	—	—	—	—	—	
C-5	3219	First Aid Room		Detection	300	Ionization	N	N	N	N	N	
C-5	3219	First Aid Room		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-5	3219	First Aid Room		Feature	None	N/A	—	—	—	—	—	
C-5	3220	Key Access Area		Detection	300	Ionization	N	N	N	N	N	
C-5	3220	Key Access Area		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-5	3220	Key Access Area		Feature	None	N/A	—	—	—	—	—	
C-5	3221	Vestibule No. 1		Detection	None	N/A	—	—	—	—	—	
C-5	3221	Vestibule No. 1		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-5	3221	Vestibule No. 1		Feature	None	N/A	—	—	—	—	—	
C-5	3222	Health Physicist's Office		Detection	300	Ionization	N	N	N	N	N	
C-5	3222	Health Physicist's Office		Suppression	SKC34	Wet Pipe	N	N	N	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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
C-5	3222	Health Physicist's Office		Feature	None	N/A	—	—	—	—	—	
C-5	3223	Janitor's Closet		Detection	300	Ionization	N	N	N	N	N	
C-5	3223	Janitor's Closet		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-5	3223	Janitor's Closet		Feature	None	N/A	—	—	—	—	—	
C-5	3224	Vestibule No. 2		Detection	300	Ionization	N	N	N	N	N	
C-5	3224	Vestibule No. 2		Suppression	None	N/A	—	—	—	—	—	
C-5	3224	Vestibule No. 2		Feature	None	N/A	—	—	—	—	—	
C-5	3233	Women's Locker Room		Detection	300	Ionization	N	N	N	N	N	
C-5	3233	Women's Locker Room		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-5	3233	Women's Locker Room		Feature	None	N/A	—	—	—	—	—	
C-5	3236	Storage		Detection	None	N/A	—	—	—	—	—	
C-5	3236	Storage		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-5	3236	Storage		Feature	None	N/A	—	—	—	—	—	
C-5	3237	Communications Closet		Detection	300	Ionization	N	N	N	N	N	
C-5	3237	Communications Closet		Suppression	None	N/A	—	—	—	—	—	
C-5	3237	Communications Closet		Feature	None	N/A	—	—	—	—	—	
C-5	All <sup>1</sup>	All fire zones in the fire area.		Detection	301	Ionization	N	N	N	N	N	<sup>1</sup> area above the drop ceiling is open to all zones

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
C-5	All*	All fire zones in the fire area.		Suppression	SKC38	Wet Pipe	N	N	N	Y	N	*area above the drop ceiling is open to all zones

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
<b>C-6</b>		<b>Control Building Access Control Area, Control Building, El. 1984</b>	<b>4.2.3.2</b>									
C-6	3201	Stair No. C-1		Detection	None	N/A	—	—	—	—	—	
C-6	3201	Stair No. C-1		Suppression	None	N/A	—	—	—	—	—	
C-6	3201	Stair No. C-1		Feature	None	N/A	—	—	—	—	—	
C-6	3202	Controlled HP Tool and Instr. Storage Room		Detection	300	Ionization	N	N	N	N	N	
C-6	3202	Controlled HP Tool and Instr. Storage Room		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-6	3202	Controlled HP Tool and Instr. Storage Room		Feature	None	N/A	—	—	—	—	—	
C-6	3204	Corridor No. 1		Detection	300	Ionization	N	N	N	N	N	
C-6	3204	Corridor No. 1		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-6	3204	Corridor No. 1		Feature	None	N/A	—	—	—	—	—	
C-6	3205	Respirator Maintenance/Hot Janitor's Closet		Detection	300	Ionization	N	N	N	N	N	
C-6	3205	Respirator Maintenance/Hot Janitor's Closet		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-6	3205	Respirator Maintenance/Hot Janitor's Closet		Feature	None	N/A	—	—	—	—	—	
C-6	3206	Women's Hot Shower		Detection	None	N/A	—	—	—	—	—	
C-6	3206	Women's Hot Shower		Suppression	SKC34	Wet Pipe	N	N	N	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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
C-6	3206	Women's Hot Shower		Feature	None	N/A	—	—	—	—	—	
C-6	3207	Women's Disrobe		Detection	None	N/A	—	—	—	—	—	
C-6	3207	Women's Disrobe		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-6	3207	Women's Disrobe		Feature	None	N/A	—	—	—	—	—	
C-6	3208	Respro. Issues/Storage and Laundry		Detection	300	Ionization	N	N	N	N	N	
C-6	3208	Respro. Issues/Storage and Laundry		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-6	3208	Respro. Issues/Storage and Laundry		Feature	None	N/A	—	—	—	—	—	
C-6	3209	Hall		Detection	None	N/A	—	—	—	—	—	
C-6	3209	Hall		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-6	3209	Hall		Feature	None	N/A	—	—	—	—	—	
C-6	3210	Men's Hot Shower		Detection	None	N/A	—	—	—	—	—	
C-6	3210	Men's Hot Shower		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-6	3210	Men's Hot Shower		Feature	None	N/A	—	—	—	—	—	
C-6	3211	Frisk Area		Detection	None	N/A	—	—	—	—	—	
C-6	3211	Frisk Area		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-6	3211	Frisk Area		Feature	None	N/A	—	—	—	—	—	
C-6	3231	Men's Disrobe		Detection	300	Ionization	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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
C-6	3231	Men's Disrobe		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-6	3231	Men's Disrobe		Feature	None	N/A	—	—	—	—	—	
C-6	3232	Decon Area		Detection	300	Ionization	N	N	N	N	N	
C-6	3232	Decon Area		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-6	3232	Decon Area		Feature	None	N/A	—	—	—	—	—	
C-6	3234	Audio/Video Storage		Detection	300	Ionization	N	N	N	N	N	
C-6	3234	Audio/Video Storage		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-6	3234	Audio/Video Storage		Feature	None	N/A	—	—	—	—	—	
C-6	3235	ALARA Brief Room		Detection	300	Ionization	N	N	N	N	N	
C-6	3235	ALARA Brief Room		Suppression	SKC34	Wet Pipe	N	N	N	Y	N	
C-6	3235	ALARA Brief Room		Feature	None	N/A	—	—	—	—	—	
C-6	All¹	All fire zones in the fire area.		Detection	301	Ionization	N	N	N	N	N	¹area above the drop ceiling is open to all zones
C-6	All¹	All fire zones in the fire area.		Suppression	SKC38	Wet Pipe	N	N	N	Y	N	¹area above the drop ceiling is open to all zones
<b>C-7      Control Building North      4.2.4.2</b> <b>Cable Chase, Control</b> <b>Building, El. 1984</b>												
C-7	3230	Electrical Chase (North)		Detection	300	Ionization	N	N	N	N	N	
C-7	3230	Electrical Chase (North)		Suppression	SKC37	Wet Pipe	N	N	N	N	N	
C-7	3230	Electrical Chase (North)		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
C-8		Control Building Cable Chase B, Control Building. EI. 1984	4.2.3.2									
C-8	3229	Electrical Chase (South)		Detection	300	Ionization	N	N	N	N	N	
C-8	3229	Electrical Chase (South)		Suppression	SKC37	Wet Pipe	N	N	N	N	N	
C-8	3229	Electrical Chase (South)		Feature	None	N/A	—	—	—	—	—	
C-9		ESF Switchgear Room A	4.2.4.2									
C-9	3301	ESF Switchgear Room No. 1		Detection	314	Ionization	N	N	N	Y	N	
C-9	3301	ESF Switchgear Room No. 1		Detection	315	Ionization	N	N	N	Y	N	
C-9	3301	ESF Switchgear Room No. 1		Suppression	SKC01	Halon	N	N	N	Y	N	
C-9	3301	ESF Switchgear Room No. 1		Feature	None	N/A	—	—	—	—	—	
C-10		ESF Switchgear Room B	4.2.4.2									
C-10	3302	ESF Switchgear Room No. 2		Detection	317	Ionization	N	N	N	Y	N	
C-10	3302	ESF Switchgear Room No. 2		Detection	316	Ionization	N	N	N	Y	N	
C-10	3302	ESF Switchgear Room No. 2		Suppression	SKC01	Halon	N	N	N	Y	N	
C-10	3302	ESF Switchgear Room No. 2		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
C-11		Control Building Cable Chase B, Control Building, El. 2000	4.2.4.2									
C-11	3305	Electrical Chase (South)		Detection	301	Ionization	N	N	N	N	N	
C-11	3305	Electrical Chase (South)		Suppression	SKC37	Wet Pipe	N	N	N	Y	N	
C-11	3305	Electrical Chase (South)		Feature	None	N/A	—	—	—	—	—	
C-12		Control Building Cable Chase A, Control Building, El. 2000	4.2.4.2									
C-12	3306	Electrical Chase (North)		Detection	301	Ionization	N	N	N	N	N	
C-12	3306	Electrical Chase (North)		Suppression	SKC37	Wet Pipe	N	N	N	Y	N	
C-12	3306	Electrical Chase (North)		Feature	None	N/A	—	—	—	—	—	
C-13		Class 1E Train B AC Equipment Room	4.2.3.2									
C-13	3415	Access Control and Electrical Equip. A/C Units Room No. 1		Detection	303	Ionization	N	N	N	N	N	
C-13	3415	Access Control and Electrical Equip. A/C Units Room No. 1		Suppression	None	N/A	—	—	—	—	—	
C-13	3415	Access Control and Electrical Equip. A/C Units Room No. 1		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
C-14		Class 1E Train A AC Equipment Room	4.2.3.2									
C-14	3416	Access Control and Electrical Equip. A/C Units Room No. 2		Detection	303	Ionization	N	N	N	N	N	
C-14	3416	Access Control and Electrical Equip. A/C Units Room No. 2		Suppression	None	N/A	—	—	—	—	—	
C-14	3416	Access Control and Electrical Equip. A/C Units Room No. 2		Feature	None	N/A	—	—	—	—	—	



**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
C-15		Battery and Switchboard Room B, Control Building, El. 2016	4.2.4.2									
C-15	3403	Non-Vital Switchgear and Transformer Room No. 1		Detection	304	Ionization	N	N	N	Y	N	
C-15	3403	Non-Vital Switchgear and Transformer Room No. 1		Detection	305	Ionization	N	N	N	Y	N	
C-15	3403	Non-Vital Switchgear and Transformer Room No. 1		Suppression	None	N/A	—	—	—	—	—	
C-15	3403	Non-Vital Switchgear and Transformer Room No. 1		Feature	None	N/A	—	—	—	—	—	
C-15	3404	Switchboard Room No. 4 (Rm. 3404)		Detection	322	Ionization	N	N	N	Y	N	
C-15	3404	Switchboard Room No. 4 (Rm. 3404)		Detection	321	Ionization	N	N	N	Y	N	
C-15	3404	Switchboard Room No. 4 (Rm. 3404)		Suppression	None	N/A	—	—	—	—	—	
C-15	3404	Switchboard Room No. 4 (Rm. 3404)		Feature	None	N/A	—	—	—	—	—	
C-15	3405	Battery Room No. 4		Detection	303	Ionization	N	N	N	Y	N	
C-15	3405	Battery Room No. 4		Suppression	None	N/A	—	—	—	—	—	
C-15	3405	Battery Room No. 4		Feature	None	N/A	—	—	—	—	—	
C-15	3410	Switchboard Room No. 2		Detection	324	Ionization	N	N	N	Y	N	
C-15	3410	Switchboard Room No. 2		Detection	328	Ionization	N	N	N	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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
C-15	3410	Switchboard Room No. 2		Suppression	None	N/A	—	—	—	—	—	
C-15	3410	Switchboard Room No. 2		Feature	None	N/A	—	—	—	—	—	
C-15	3411	Battery Room No 2		Detection	303	Ionization	N	N	N	Y	N	
C-15	3411	Battery Room No 2		Suppression	None	N/A	—	—	—	—	—	
C-15	3411	Battery Room No 2		Feature	None	N/A	—	—	—	—	—	

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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
<b>C-16</b>		<b>Battery and Switchboard Room A, Control Building, El. 2016</b>	<b>4.2.4.2</b>									
C-16	3407	Battery Room No. 1		Detection	303	Ionization	N	N	N	Y	N	
C-16	3407	Battery Room No. 1		Suppression	None	N/A	—	—	—	—	—	
C-16	3407	Battery Room No. 1		Feature	None	N/A	—	—	—	—	—	
C-16	3408	Switchboard Room No. 1		Detection	326	Ionization	N	N	N	Y	N	
C-16	3408	Switchboard Room No. 1		Detection	325	Ionization	N	N	N	Y	N	
C-16	3408	Switchboard Room No. 1		Suppression	None	N/A	—	—	—	—	—	
C-16	3408	Switchboard Room No. 1		Feature	None	N/A	—	—	—	—	—	
C-16	3409	Non-Vital Switchgear and Transformer Room No. 2		Detection	327	Ionization	N	N	N	Y	N	
C-16	3409	Non-Vital Switchgear and Transformer Room No. 2		Detection	323	Ionization	N	N	N	Y	N	
C-16	3409	Non-Vital Switchgear and Transformer Room No. 2		Suppression	None	N/A	—	—	—	—	—	
C-16	3409	Non-Vital Switchgear and Transformer Room No. 2		Feature	None	N/A	—	—	—	—	—	
C-16	3413	Battery Room No. 3		Detection	303	Ionization	N	N	N	Y	N	
C-16	3413	Battery Room No. 3		Suppression	None	N/A	—	—	—	—	—	



**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
C-16	3413	Battery Room No. 3		Feature	None	N/A	—	—	—	—	—	
C-16	3414	Switchboard Room No. 3		Detection	318	Photoelectric	N	N	N	Y	N	
C-16	3414	Switchboard Room No. 3		Detection	320	Ionization	N	N	N	Y	N	
C-16	3414	Switchboard Room No. 3		Suppression	None	N/A	—	—	—	—	—	
C-16	3414	Switchboard Room No. 3		Feature	None	N/A	—	—	—	—	—	
<b>C-17 Control Building Cable Chase B, Control Building, El. 2016 4.2.4.2</b>												
C-17	3418	Electrical Chase (South)		Detection	303	Ionization	N	N	N	N	N	
C-17	3418	Electrical Chase (South)		Suppression	SKC37	Wet Pipe	N	N	N	Y	N	
C-17	3418	Electrical Chase (South)		Feature	None	N/A	—	—	—	—	—	
<b>C-18 Control Building Cable Chase A, Control Building, El. 2016 4.2.4.2</b>												
C-18	3419	Electrical Chase (North)		Detection	303	Ionization	N	N	N	N	N	
C-18	3419	Electrical Chase (North)		Suppression	SKC37	Wet Pipe	N	N	N	Y	N	
C-18	3419	Electrical Chase (North)		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
C-19		Control Building Cable Chase A at column C-3, Control Building, El. 2016	4.2.3.2									
C-19	C19'	Electrical Chase (North)		Detection	303	Ionization	N	N	N	N	N	1room has no number so the fire area is used
C-19	C19'	Electrical Chase (North)		Suppression	SKC37	Wet Pipe	N	N	N	N	N	1room has no number so the fire area is used
C-19	C19'	Electrical Chase (North)		Feature	None	N/A	—	—	—	—	—	1room has no number so the fire area is used
C-20		Control Building Cable Chase B at column C-6, Control Building, El. 2016	4.2.4.2									
C-20	C20'	Electrical Chase (South)		Detection	303	Ionization	N	N	N	N	N	1room has no number so the fire area is used
C-20	C20'	Electrical Chase (South)		Suppression	SKC37	Wet Pipe	N	N	N	N	N	1room has no number so the fire area is used
C-20	C20'	Electrical Chase (South)		Feature	None	N/A	—	—	—	—	—	1room has no number so the fire area is used
C-21		Lower Cable Spreading Room	4.2.4.2									
C-21	3501	Lower Cable Spreading Room		Detection	306	Ionization	N	N	Y	Y	N	
C-21	3501	Lower Cable Spreading Room		Suppression	SKC39	Pre-action	N	N	Y	Y	N	
C-21	3501	Lower Cable Spreading Room		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
C-22		Upper Cable Spreading Room	4.2.4.2									
C-22	3801	Upper Cable Spreading Room		Detection	307	Ionization	N	N	N	Y	N	
C-22	3801	Upper Cable Spreading Room		Suppression	SKC40	Pre-action	N	N	N	Y	N	
C-22	3801	Upper Cable Spreading Room		Feature	None	N/A	—	—	—	—	—	
C-23		Control Building Cable Chase B, Control Building, El. 2032	4.2.4.2									
C-23	3505	Electrical Chase		Detection	303	Ionization	N	N	N	N	N	
C-23	3505	Electrical Chase		Suppression	SKC37	Wet Pipe	N	N	N	Y	N	
C-23	3505	Electrical Chase		Feature	None	N/A	—	—	—	—	—	
C-24		Control Building Cable Chase A, Control Building, El. 2032	4.2.4.2									
C-24	3504	Electrical Chase		Detection	303	Ionization	N	N	N	Y	N	
C-24	3504	Electrical Chase		Suppression	SKC37	Wet Pipe	N	N	N	Y	N	
C-24	3504	Electrical Chase		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
<b>C-25</b>		<b>Control Building Cable Chase B at column C-6, Control Building, El. 2032</b>	<b>4.2.4.2</b>									
C-25	C25'	Electrical Chase (South)		Detection	303	Ionization	N	N	N	N	N	'room has no number so the fire area is used
C-25	C25'	Electrical Chase (South)		Suppression	SKC37	Wet Pipe	N	N	N	N	N	'room has no number so the fire area is used
C-25	C25'	Electrical Chase (South)		Feature	None	N/A	—	—	—	—	—	'room has no number so the fire area is used
<b>C-26</b>		<b>Control Building Cable Chase A at column C-3, Control Building, El. 2032</b>	<b>4.2.4.2</b>									
C-26	C26'	Electrical Chase (North)		Detection	303	Ionization	N	N	N	N	N	'room has no number so the fire area is used
C-26	C26'	Electrical Chase (North)		Suppression	SKC37	Wet Pipe	N	N	N	N	N	'room has no number so the fire area is used
C-26	C26'	Electrical Chase (North)		Feature	None	N/A	—	—	—	—	—	'room has no number so the fire area is used



**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
<b>C-27</b>		<b>Control Room Area</b>	<b>4.2.4.2</b>									
C-27	3601	Control Room		Detection	329	Ionization	N	Y	N	Y	N	
C-27	3601	Control Room		Detection	309	Ionization	N	Y	N	Y	N	
C-27	3601	Control Room		Detection	319	Ionization	N	Y	N	Y	N	
C-27	3601	Control Room		Detection	308	Ionization	N	Y	N	Y	N	
C-27	3601	Control Room		Suppression	SKC07	Halon	N	N	N	N	N	for the cable trenches
C-27	3601	Control Room		Feature	None	N/A	—	—	—	—	—	
C-27	3603	Shift Manager's Office		Detection	308	Ionization	N	Y	N	Y	N	
C-27	3603	Shift Manager's Office		Suppression	None	N/A	—	—	—	—	—	
C-27	3603	Shift Manager's Office		Feature	None	N/A	—	—	—	—	—	
C-27	3604	Foyer		Detection	None	N/A	—	—	—	—	—	
C-27	3604	Foyer		Suppression	None	N/A	—	—	—	—	—	
C-27	3604	Foyer		Feature	None	N/A	—	—	—	—	—	
C-27	3605	Equipment Cabinet Area		Detection	308	Ionization	N	Y	N	Y	N	
C-27	3605	Equipment Cabinet Area		Suppression	None	N/A	—	—	—	—	—	
C-27	3605	Equipment Cabinet Area		Feature	None	N/A	—	—	—	—	—	
C-27	3606	Emergency Equipment Storage Room		Detection	308	Ionization	N	Y	N	Y	N	
C-27	3606	Emergency Equipment Storage Room		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
C-27	3616	Vestibule (South)		Detection	None	N/A	—	—	—	—	—	
C-27	3616	Vestibule (South)		Feature	None	N/A	—	—	—	—	—	
<b>C-28 Control Room Service Area 4.2.3.2</b>												
C-28	3602	Pantry		Detection	308	Thermal	N	N	Y	N	N	
C-28	3602	Pantry		Suppression	None	N/A	—	—	—	—	—	
C-28	3602	Pantry		Feature	None	N/A	—	—	—	—	—	
C-28	3607	Restroom		Detection	None	N/A	—	—	—	—	—	
C-28	3607	Restroom		Suppression	None	N/A	—	—	—	—	—	
C-28	3607	Restroom		Feature	None	N/A	—	—	—	—	—	
C-28	3608	Janitor's Closet		Detection	308	Ionization	N	N	N	N	N	
C-28	3608	Janitor's Closet		Suppression	None	N/A	—	—	—	—	—	
C-28	3608	Janitor's Closet		Feature	None	N/A	—	—	—	—	—	
<b>C-29 SAS Room, Control Building, El. 2047 4.2.3.2</b>												
C-29	3609	SAS Room		Detection	308	Ionization	N	N	N	N	N	
C-29	3609	SAS Room		Suppression	None	N/A	—	—	—	—	—	
C-29	3609	SAS Room		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
C-30		Control Building Cable Chase B, Control Building, El. 2047	4.2.4.2									
C-30	3617	Electrical Chase (South)		Detection	308	Ionization	N	N	N	Y	N	
C-30	3617	Electrical Chase (South)		Suppression	SKC37	Wet Pipe	N	N	N	Y	N	
C-30	3617	Electrical Chase (South)		Feature	None	N/A	—	—	—	—	—	
C-31		Control Building Cable Chase A, Control Building, El. 2047	4.2.4.2									
C-31	3618	Electrical Chase (North)		Detection	308	Ionization	N	N	N	N	N	
C-31	3618	Electrical Chase (North)		Suppression	SKC37	Wet Pipe	N	N	N	Y	N	
C-31	3618	Electrical Chase (North)		Feature	None	N/A	—	—	—	—	—	
C-32		Control Building Cable Chase B at column C-6, Control Building, El. 2047	4.2.4.2									
C-32	C32¹	Electrical Chase (South)		Detection	308	Ionization	N	N	N	N	N	¹room has no number so the fire area is used
C-32	C32¹	Electrical Chase (South)		Suppression	SKC37	Wet Pipe	N	N	N	N	N	¹room has no number so the fire area is used
C-32	C32¹	Electrical Chase (South)		Feature	None	N/A	—	—	—	—	—	¹room has no number so the fire area is used

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
<b>C-33</b>		<b>Control Building Cable Chase B, Control Building, El. 2073-6</b>	<b>4.2.4.2</b>									
C-33	3804	Electrical Chase (South)		Detection	308	Ionization	N	N	N	Y	N	
C-33	3804	Electrical Chase (South)		Suppression	SKC37	Wet Pipe	N	N	N	Y	N	
C-33	3804	Electrical Chase (South)		Feature	None	N/A	—	—	—	—	—	
<b>C-34</b>		<b>Control Building Cable Chase B at column C-6, Control Building, El. 2073-6</b>	<b>4.2.3.2</b>									
C-34	C34'	Electrical Chase (South)		Detection	308	Ionization	N	N	N	N	N	'room has no number so the fire area is used
C-34	C34'	Electrical Chase (South)		Suppression	SKC37	Wet Pipe	N	N	N	N	N	'room has no number so the fire area is used
C-34	C34'	Electrical Chase (South)		Feature	None	N/A	—	—	—	—	—	'room has no number so the fire area is used



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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
C-35		Control Building Corridor, Control Building, El. 2016	4.2.4.2									
C-35	3401	Corridor No. 1		Detection	None	N/A	—	—	—	—	—	
C-35	3401	Corridor No. 1		Suppression	None	N/A	—	—	—	—	—	
C-35	3401	Corridor No. 1		Feature	None	ERFBS	—	—	—	—	—	
C-35	3406	Corridor No. 2		Detection	None	N/A	—	—	—	—	—	
C-35	3406	Corridor No. 2		Suppression	None	N/A	—	—	—	—	—	
C-35	3406	Corridor No. 2		Feature	None	N/A	—	—	—	—	—	
C-35	3412	Emergency Shower and Eyewash Area		Detection	None	N/A	—	—	—	—	—	
C-35	3412	Emergency Shower and Eyewash Area		Suppression	None	N/A	—	—	—	—	—	
C-35	3412	Emergency Shower and Eyewash Area		Feature	None	N/A	—	—	—	—	—	
C-36		Control Building Cable Chase B at column C-6, Control Building, El. 2000	4.2.4.2									
C-36	C36¹	Cable Chase at column line C-6		Detection	None	Ionization	N	N	N	N	N	¹room has no number so the fire area is used
C-36	C36¹	Cable Chase at column line C-6		Suppression	SKC37	Wet Pipe	N	N	N	N	N	¹room has no number so the fire area is used
C-36	C36¹	Cable Chase at column line C-6		Feature	None	N/A	—	—	—	—	—	¹room has no number so the fire area is used

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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
C-37		Control Building Cable Chase A, Control Building, El. 2000	4.2.3.2									
C-37	C37'	Electrical Chase (North)		Detection	None	N/A	—	—	—	—	—	*room has no number so the fire area is used
C-37	C37'	Electrical Chase (North)		Suppression	SKC37	Wet Pipe	N	N	N	N	N	*room has no number so the fire area is used
C-37	C37'	Electrical Chase (North)		Feature	None	N/A	—	—	—	—	—	*room has no number so the fire area is used
D-1		Diesel Generator A, Diesel Generator Building, El. 2000'	4.2.3.2									
D-1	5203	Diesel Generator Room A		Detection	503	Thermal	N	N	N	N	N	
D-1	5203	Diesel Generator Room A		Detection	500	Flame	N	N	N	Y	N	
D-1	5203	Diesel Generator Room A		Suppression	SKC26	Pre-action	N	N	N	N	N	
D-1	5203	Diesel Generator Room A		Feature	None	N/A	—	—	—	—	—	
D-2		Diesel Generator B, Diesel Generator Building, El. 2000'	4.2.3.2									
D-2	5201	Diesel Generator Room B		Detection	501	Flame	N	N	N	Y	N	
D-2	5201	Diesel Generator Room B		Detection	502	Thermal	N	N	N	N	N	
D-2	5201	Diesel Generator Room B		Suppression	SKC27	Pre-action	N	N	N	N	N	
D-2	5201	Diesel Generator Room B		Feature	None	N/A	—	—	—	—	—	

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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
FB-1 Fuel Handling Building 4.2.4.2												
FB-1	6101	Stair F-1		Detection	None	N/A	—	—	—	—	—	
FB-1	6101	Stair F-1		Suppression	None	N/A	—	—	—	—	—	
FB-1	6101	Stair F-1		Feature	None	N/A	—	—	—	—	—	
FB-1	6102	Laydown Area		Detection	600	Thermal	N	N	N	N	N	
FB-1	6102	Laydown Area		Suppression	SKC25	Pre-action	N	N	N	N	N	Railroad bay/lay down area
FB-1	6102	Laydown Area		Feature	None	N/A	—	—	—	—	—	
FB-1	6103	Cask Loading Pool		Detection	None	N/A	—	—	—	—	—	
FB-1	6103	Cask Loading Pool		Suppression	None	N/A	—	—	—	—	—	
FB-1	6103	Cask Loading Pool		Feature	None	N/A	—	—	—	—	—	
FB-1	6104	Fuel Pool Cooling Heat Exchanger Room		Detection	601	Ionization	N	N	N	N	N	
FB-1	6104	Fuel Pool Cooling Heat Exchanger Room		Suppression	None	N/A	—	—	—	—	—	
FB-1	6104	Fuel Pool Cooling Heat Exchanger Room		Feature	None	N/A	—	—	—	—	—	
FB-1	6105	Fuel Pool Cooling Heat Exchanger Room		Detection	601	Ionization	N	N	N	N	N	
FB-1	6105	Fuel Pool Cooling Heat Exchanger Room		Suppression	None	N/A	—	—	—	—	—	
FB-1	6105	Fuel Pool Cooling Heat Exchanger Room		Feature	None	N/A	—	—	—	—	—	
FB-1	6106	Spent Fuel Pool and Storage Racks		Detection	None	N/A	—	—	—	—	—	
FB-1	6106	Spent Fuel Pool and Storage Racks		Suppression	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
FB-1	6106	Spent Fuel Pool and Storage Racks		Feature	None	N/A	—	—	—	—	—	
FB-1	6201	Passage		Detection	None	N/A	—	—	—	—	—	
FB-1	6201	Passage		Suppression	None	N/A	—	—	—	—	—	
FB-1	6201	Passage		Feature	None	N/A	—	—	—	—	—	
FB-1	6202	Electrical Equipment Room		Detection	601	Ionization	N	N	N	N	N	
FB-1	6202	Electrical Equipment Room		Suppression	None	N/A	—	—	—	—	—	
FB-1	6202	Electrical Equipment Room		Feature	None	N/A	—	—	—	—	—	
FB-1	6203	Air Handling Equipment Room		Detection	601	Ionization	N	N	N	N	N	
FB-1	6203	Air Handling Equipment Room		Suppression	None	N/A	—	—	—	—	—	
FB-1	6203	Air Handling Equipment Room		Feature	None	N/A	—	—	—	—	—	
FB-1	6204	Cask Washdown Pit		Detection	None	N/A	—	—	—	—	—	
FB-1	6204	Cask Washdown Pit		Suppression	None	N/A	—	—	—	—	—	
FB-1	6204	Cask Washdown Pit		Feature	None	N/A	—	—	—	—	—	
FB-1	6205	Fuel Transfer Canal		Detection	None	N/A	—	—	—	—	—	
FB-1	6205	Fuel Transfer Canal		Suppression	None	N/A	—	—	—	—	—	
FB-1	6205	Fuel Transfer Canal		Feature	None	N/A	—	—	—	—	—	
FB-1	6210	New Fuel Storage Area		Detection	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
FB-1	6210	New Fuel Storage Area		Suppression	None	N/A	—	—	—	—	—	
FB-1	6210	New Fuel Storage Area		Feature	None	N/A	—	—	—	—	—	
FB-1	6301	General Floor Area		Detection	602	Flame	N	N	N	N	N	
FB-1	6301	General Floor Area		Suppression	None	N/A	—	—	—	—	—	
FB-1	6301	General Floor Area		Feature	None	N/A	—	—	—	—	—	
FB-1	6302	Laydown Area		Detection	None	N/A	—	—	—	—	—	
FB-1	6302	Laydown Area		Suppression	None	N/A	—	—	—	—	—	
FB-1	6302	Laydown Area		Feature	None	N/A	—	—	—	—	—	
FB-1	6303	Exhaust Filter Adsorber Room 'B'		Detection	601	Ionization	N	N	N	N	N	
FB-1	6303	Exhaust Filter Adsorber Room 'B'		Suppression	None	N/A	—	—	—	—	—	
FB-1	6303	Exhaust Filter Adsorber Room 'B'		Feature	None	N/A	—	—	—	—	—	
FB-1	6304	Exhaust Filter Adsorber Room 'A'		Detection	601	Ionization	N	N	N	N	N	
FB-1	6304	Exhaust Filter Adsorber Room 'A'		Suppression	None	N/A	—	—	—	—	—	
FB-1	6304	Exhaust Filter Adsorber Room 'A'		Feature	None	N/A	—	—	—	—	—	



**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
LDF-1		<b>Laundry Decontamination Facility</b>	<b>4.2.3.2</b>									
LDF-1	1332	Decontamination Room and Trash Sorting Area		Detection	116	Ionization	N	N	N	N	N	
LDF-1	1332	Decontamination Room and Trash Sorting Area		Suppression	LDF	Wet Pipe	N	N	N	N	N	
LDF-1	1332	Decontamination Room and Trash Sorting Area		Feature	None	N/A	—	—	—	—	—	
LDF-1	1333	Laundry Room A		Detection	116	Ionization	N	N	N	N	N	
LDF-1	1333	Laundry Room A		Suppression	LDF	Wet Pipe	N	N	N	N	N	
LDF-1	1333	Laundry Room A		Feature	None	N/A	—	—	—	—	—	
LDF-1	1334	Equipment Room		Detection	116	Ionization	N	N	N	N	N	
LDF-1	1334	Equipment Room		Suppression	LDF	Wet Pipe	N	N	N	N	N	
LDF-1	1334	Equipment Room		Feature	None	N/A	—	—	—	—	—	
LDF-1	1337	Clean Laundry Sorting Area		Detection	116	Ionization	N	N	N	N	N	
LDF-1	1337	Clean Laundry Sorting Area		Suppression	LDF	Wet Pipe	N	N	N	N	N	
LDF-1	1337	Clean Laundry Sorting Area		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
<b>RB-1</b>		<b>Reactor Building</b>	<b>4.2.4.2</b>									
RB-1	RB1	Reactor Building - El. 2000', Rx Coolant Pumps		Detection	206	Line-Type	N	N	N	Y	N	
RB-1	RB1	Reactor Building - El. 2000', Rx Coolant Pumps		Detection	203	Line-Type	N	N	N	Y	N	
RB-1	RB1	Reactor Building - El. 2000', Rx Coolant Pumps		Detection	215	Line-Type	N	N	N	Y	N	
RB-1	RB1	Reactor Building - El. 2000', Rx Coolant Pumps		Detection	216	Line-Type	N	N	N	Y	N	
RB-1	RB1	Reactor Building - El. 2000', Rx Coolant Pumps		Detection	218	Line-Type	N	N	N	Y	N	
RB-1	RB1	Reactor Building - El. 2000', Rx Coolant Pumps		Suppression	None	N/A	—	—	—	—	—	
RB-1	RB1	Reactor Building - El. 2000', Rx Coolant Pumps		Feature	None	N/A	—	—	—	—	—	
RB-1	RB2	Reactor Building - El. 2000', Outer Annulus; Reactor Building - El. 2026', Above Accumulators A & D and Eastern Semi Annulus		Detection	215	Line-Type	N	N	N	Y	N	
RB-1	RB2	Reactor Building - El. 2000', Outer Annulus; Reactor Building - El. 2026', Above Accumulators A & D and Eastern Semi Annulus		Detection	205	Line-Type	N	N	N	Y	N	
RB-1	RB2	Reactor Building - El. 2000', Outer Annulus; Reactor Building - El. 2026', Above Accumulators A & D and Eastern Semi Annulus		Detection	204	Line-Type	N	N	N	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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
RB-1	RB2	Reactor Building - El. 2000', Outer Annulus; Reactor Building - El. 2026', Above Accumulators A & D and Eastern Semi Annulus		Detection	203	Line-Type	N	N	N	Y	N	
RB-1	RB2	Reactor Building - El. 2000', Outer Annulus; Reactor Building - El. 2026', Above Accumulators A & D and Eastern Semi Annulus		Detection	202	Line-Type	N	N	N	Y	N	
RB-1	RB2	Reactor Building - El. 2000', Outer Annulus; Reactor Building - El. 2026', Above Accumulators A & D and Eastern Semi Annulus		Detection	201	Line-Type	N	N	N	Y	N	
RB-1	RB2	Reactor Building - El. 2000', Outer Annulus; Reactor Building - El. 2026', Above Accumulators A & D and Eastern Semi Annulus		Suppression	None	N/A	—	—	—	—	—	
RB-1	RB2	Reactor Building - El. 2000', Outer Annulus; Reactor Building - El. 2026', Above Accumulators A & D and Eastern Semi Annulus		Feature	None	Radiant Energy Shield	Y	N	N	N	N	Reactor Vessel as Radiant Energy Shield
RB-1	RB3	Reactor Building - El. 2026', North Electrical Penetration Area		Detection	215	Line-Type	Y	N	N	Y	N	
RB-1	RB3	Reactor Building - El. 2026', North Electrical Penetration Area		Feature	None	N/A	—	—	—	—	—	



**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
RB-1	RB3'	Reactor Building - El. 2026', North Electrical Penetration Area		Suppression	SKC41	Pre-action	Y	N	N	N	N	'over cable trays; manually actuated from MCR
RB-1	RB4	Reactor Building - El. 2026', South Electrical Penetration Area		Detection	216	Line-Type	Y	N	N	N	N	
RB-1	RB4	Reactor Building - El. 2026', South Electrical Penetration Area		Detection	205	Line-Type	Y	N	N	N	N	
RB-1	RB4	Reactor Building - El. 2026', South Electrical Penetration Area		Detection	204	Line-Type	Y	N	N	N	N	
RB-1	RB4	Reactor Building - El. 2026', South Electrical Penetration Area		Detection	203	Line-Type	Y	N	N	N	N	
RB-1	RB4	Reactor Building - El. 2026', South Electrical Penetration Area		Feature	None	Radiant Energy Shield	Y	N	N	N	N	wrapped conduit as Radiant Energy Shield
RB-1	RB4'	Reactor Building - El. 2026', South Electrical Penetration Area		Suppression	SKC42	Pre-action	Y	N	N	N	N	'over cable trays; manually actuated from MCR
RB-1	RB5	Reactor Building - El. 1974', Tendon Access Gallery; El. 2047', Main Floor and Reactor Vessel Area; El. 2051', Cable Tray Area; El. 2068', Reactor Building		Detection	217	Line-Type	N	N	N	Y	N	
RB-1	RB5	Reactor Building - El. 1974', Tendon Access Gallery; El. 2047', Main Floor and Reactor Vessel Area; El. 2051', Cable Tray Area; El. 2068', Reactor Building		Detection	218	Line-Type	N	N	N	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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
RB-1	RB5	Reactor Building - El. 1974', Tendon Access Gallery; El. 2047', Main Floor and Reactor Vessel Area; El. 2051', Cable Tray Area; El. 2068', Reactor Building		Detection	219	Ionization	N	N	N	Y	N	
RB-1	RB5	Reactor Building - El. 1974', Tendon Access Gallery; El. 2047', Main Floor and Reactor Vessel Area; El. 2051', Cable Tray Area; El. 2068', Reactor Building		Detection	220	Line-Type	N	N	N	Y	N	
RB-1	RB5	Reactor Building - El. 1974', Tendon Access Gallery; El. 2047', Main Floor and Reactor Vessel Area; El. 2051', Cable Tray Area; El. 2068', Reactor Building		Suppression	None	N/A	—	—	—	—	—	
RB-1	RB5	Reactor Building - El. 1974', Tendon Access Gallery; El. 2047', Main Floor and Reactor Vessel Area; El. 2051', Cable Tray Area; El. 2068', Reactor Building		Feature	None	Radiant Energy Shield	Y	N	N	N	N	wrapped conduit as Radiant Energy Shield
<b>RSB-1</b>	<b>RAM Storage Building 4.2.3.2</b>											
RSB-1	8501	RAM Storage Building		Detection	801	Ionization	N	N	N	N	N	
RSB-1	8501	RAM Storage Building		Suppression	None	Wet Pipe	N	N	N	N	N	
RSB-1	8501	RAM Storage Building		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
<b>RW-1</b>		<b>Radwaste Building</b>	<b>4.2.3.2</b>									
RW-1	7101	Waste Gas Compressor Room No. 1		Detection	None	N/A	—	—	—	—	—	
RW-1	7101	Waste Gas Compressor Room No. 1		Feature	None	N/A	—	—	—	—	—	
RW-1	7102	Hydrogen Recombiner Room No. 1		Detection	None	N/A	—	—	—	—	—	
RW-1	7102	Hydrogen Recombiner Room No. 1		Feature	None	N/A	—	—	—	—	—	
RW-1	7103	Valve Room No. 1		Detection	705	Ionization	N	N	N	N	N	
RW-1	7103	Valve Room No. 1		Feature	None	N/A	—	—	—	—	—	
RW-1	7104	Recycle Evaporator Feed Pump Room		Detection	None	N/A	—	—	—	—	—	
RW-1	7104	Recycle Evaporator Feed Pump Room		Feature	None	N/A	—	—	—	—	—	
RW-1	7105	Recycle Hold-up Tank Room No. 1		Detection	None	N/A	—	—	—	—	—	
RW-1	7105	Recycle Hold-up Tank Room No. 1		Feature	None	N/A	—	—	—	—	—	
RW-1	7106	Waste Gas Compressor Room No. 2		Detection	None	N/A	—	—	—	—	—	
RW-1	7106	Waste Gas Compressor Room No. 2		Feature	None	N/A	—	—	—	—	—	
RW-1	7107	Hydrogen Recombiner Room No. 2		Detection	None	N/A	—	—	—	—	—	
RW-1	7107	Hydrogen Recombiner Room No. 2		Feature	None	N/A	—	—	—	—	—	
RW-1	7108	Valve Room No. 2		Detection	705	Ionization	N	N	N	N	N	
RW-1	7108	Valve Room No. 2		Feature	None	N/A	—	—	—	—	—	
RW-1	7109	Corridor No. 1		Detection	705	Ionization	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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
RW-1	7109	Corridor No. 1		Feature	None	N/A	—	—	—	—	—	
RW-1	7110	Recycle Hold-up Tank Room No. 2		Detection	None	N/A	—	—	—	—	—	
RW-1	7110	Recycle Hold-up Tank Room No. 2		Feature	None	N/A	—	—	—	—	—	
RW-1	7111	Waste Gas Decay Tank Room No. 1		Detection	None	N/A	—	—	—	—	—	
RW-1	7111	Waste Gas Decay Tank Room No. 1		Feature	None	N/A	—	—	—	—	—	
RW-1	7112	Valve Room No. 3		Detection	None	N/A	—	—	—	—	—	
RW-1	7112	Valve Room No. 3		Feature	None	N/A	—	—	—	—	—	
RW-1	7113	Load Center and General Area		Detection	705	Ionization	N	N	N	N	N	
RW-1	7113	Load Center and General Area		Feature	None	N/A	—	—	—	—	—	
RW-1	7114	Stair RW-1		Detection	None	N/A	—	—	—	—	—	
RW-1	7114	Stair RW-1		Feature	None	N/A	—	—	—	—	—	
RW-1	7115	Waste Gas Decay Tank Room No. 2		Detection	None	N/A	—	—	—	—	—	
RW-1	7115	Waste Gas Decay Tank Room No. 2		Feature	None	N/A	—	—	—	—	—	
RW-1	7116	Valve Room No. 4		Detection	None	N/A	—	—	—	—	—	
RW-1	7116	Valve Room No. 4		Feature	None	N/A	—	—	—	—	—	
RW-1	7117	Corridor No. 2 (East, West)		Detection	705	Ionization	N	N	N	N	N	
RW-1	7117	Corridor No. 2 (East, West)		Feature	None	N/A	—	—	—	—	—	

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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
RW-1	7118	Steam Generator Blowdown Surge Tank and Pump Room		Detection	None	N/A	—	—	—	—	—	
RW-1	7118	Steam Generator Blowdown Surge Tank and Pump Room		Feature	None	N/A	—	—	—	—	—	
RW-1	7119	Radioactive Pipe Chase		Detection	None	N/A	—	—	—	—	—	
RW-1	7119	Radioactive Pipe Chase		Feature	None	N/A	—	—	—	—	—	
RW-1	7120	Chemical Drain Tank and Pump Room		Detection	None	N/A	—	—	—	—	—	
RW-1	7120	Chemical Drain Tank and Pump Room		Feature	None	N/A	—	—	—	—	—	
RW-1	7121	Waste Evaporator Feed Pump Room		Detection	705	Ionization	N	N	N	N	N	
RW-1	7121	Waste Evaporator Feed Pump Room		Feature	None	N/A	—	—	—	—	—	
RW-1	7122	Waste Hold-Up Tank Room		Detection	None	N/A	—	—	—	—	—	
RW-1	7122	Waste Hold-Up Tank Room		Feature	None	N/A	—	—	—	—	—	
RW-1	7123	Waste Evaporator Bottoms Tank Room (Primary)		Detection	None	N/A	—	—	—	—	—	
RW-1	7123	Waste Evaporator Bottoms Tank Room (Primary)		Feature	None	N/A	—	—	—	—	—	
RW-1	7124	Waste Evaporator Bottoms Tank Pump Room		Detection	705	Ionization	N	N	N	N	N	
RW-1	7124	Waste Evaporator Bottoms Tank Pump Room		Feature	None	N/A	—	—	—	—	—	
RW-1	7125	Floor Drain Tank Pump Room No. 1		Detection	705	Ionization	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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
RW-1	7125	Floor Drain Tank Pump Room No. 1		Feature	None	N/A	—	—	—	—	—	
RW-1	7126	Floor Drain Tank Room No. 1		Detection	None	N/A	—	—	—	—	—	
RW-1	7126	Floor Drain Tank Room No. 1		Feature	None	N/A	—	—	—	—	—	
RW-1	7127	Waste Monitor Tank and Pump Room		Detection	705	Ionization	N	N	N	N	N	
RW-1	7127	Waste Monitor Tank and Pump Room		Feature	None	N/A	—	—	—	—	—	
RW-1	7128	Floor Drain Tank Pump Room No. 2		Detection	705	Ionization	N	N	N	N	N	
RW-1	7128	Floor Drain Tank Pump Room No. 2		Suppression	SKC33	Wet Pipe	N	N	N	N	N	
RW-1	7128	Floor Drain Tank Pump Room No. 2		Feature	None	N/A	—	—	—	—	—	
RW-1	7129	Floor Drain Tank Room No. 2		Detection	None	N/A	—	—	—	—	—	
RW-1	7129	Floor Drain Tank Room No. 2		Feature	None	N/A	—	—	—	—	—	
RW-1	7130	Waste Evaporator Condensate Tank and Pump Room		Detection	705	Ionization	N	N	N	N	N	
RW-1	7130	Waste Evaporator Condensate Tank and Pump Room		Feature	None	N/A	—	—	—	—	—	
RW-1	7131	Vestibule		Detection	705	Ionization	N	N	N	N	N	
RW-1	7131	Vestibule		Feature	None	N/A	—	—	—	—	—	
RW-1	7132	Stair RW-2		Detection	None	N/A	—	—	—	—	—	
RW-1	7132	Stair RW-2		Feature	None	N/A	—	—	—	—	—	



**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
RW-1	7133	Electrical Chase, Non-Radioactive Pipe Tunnel & Personnel Access		Detection	705	Ionization	N	N	N	N	N	
RW-1	7133	Electrical Chase, Non-Radioactive Pipe Tunnel & Personnel Access		Feature	None	N/A	—	—	—	—	—	
RW-1	7134	Radioactive Pipe Tunnel		Detection	None	N/A	—	—	—	—	—	
RW-1	7134	Radioactive Pipe Tunnel		Feature	None	N/A	—	—	—	—	—	
RW-1	7135	Gaseous Radwaste Drain Collection Tank and Gas Decay Tank Drain Pump Room		Detection	None	N/A	—	—	—	—	—	
RW-1	7135	Gaseous Radwaste Drain Collection Tank and Gas Decay Tank Drain Pump Room		Feature	None	N/A	—	—	—	—	—	
RW-1	7201	Recycle Evaporator Room		Detection	None	N/A	—	—	—	—	—	
RW-1	7201	Recycle Evaporator Room		Feature	None	N/A	—	—	—	—	—	
RW-1	7202	Recycle Evaporator Valve Gallery		Detection	None	N/A	—	—	—	—	—	
RW-1	7202	Recycle Evaporator Valve Gallery		Feature	None	N/A	—	—	—	—	—	
RW-1	7203	Corridor No. 1		Detection	700	Ionization	N	N	N	N	N	
RW-1	7203	Corridor No. 1		Feature	None	N/A	—	—	—	—	—	
RW-1	7204	Waste Evaporator Room		Detection	None	N/A	—	—	—	—	—	
RW-1	7204	Waste Evaporator Room		Feature	None	N/A	—	—	—	—	—	
RW-1	7205	Waste Evaporator Valve Gallery		Detection	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
RW-1	7205	Waste Evaporator Valve Gallery		Feature	None	N/A	—	—	—	—	—	
RW-1	7206	SLWS Evaporator Reagent Tank Room		Detection	None	N/A	—	—	—	—	—	
RW-1	7206	SLWS Evaporator Reagent Tank Room		Feature	None	N/A	—	—	—	—	—	
RW-1	7207	SLWS Valve Gallery		Detection	None	N/A	—	—	—	—	—	
RW-1	7207	SLWS Valve Gallery		Feature	None	N/A	—	—	—	—	—	
RW-1	7208	MCC Equipment Load Center and General Area		Detection	700	Ionization	N	N	N	N	N	
RW-1	7208	MCC Equipment Load Center and General Area		Feature	None	N/A	—	—	—	—	—	
RW-1	7209	Control Room		Detection	700	Ionization	N	N	N	N	N	
RW-1	7209	Control Room		Feature	None	N/A	—	—	—	—	—	
RW-1	7210	Nuclear Sample Panel Room		Detection	None	N/A	—	—	—	—	—	
RW-1	7210	Nuclear Sample Panel Room		Feature	None	N/A	—	—	—	—	—	
RW-1	7211	Sample Laboratory		Detection	None	N/A	—	—	—	—	—	
RW-1	7211	Sample Laboratory		Feature	None	N/A	—	—	—	—	—	
RW-1	7212	Spent Resin Storage Tank Room (Primary)		Detection	None	N/A	—	—	—	—	—	
RW-1	7212	Spent Resin Storage Tank Room (Primary)		Feature	None	N/A	—	—	—	—	—	
RW-1	7213	Corridor No. 3		Detection	None	N/A	—	—	—	—	—	
RW-1	7213	Corridor No. 3		Feature	None	N/A	—	—	—	—	—	



**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
RW-1	7214	Spent Resin and Evaporator Bottom Tank and Pump Room (Secondary)		Detection	None	N/A	—	—	—	—	—	
RW-1	7214	Spent Resin and Evaporator Bottom Tank and Pump Room (Secondary)		Feature	None	N/A	—	—	—	—	—	
RW-1	7215	Decant Tank		Detection	None	N/A	—	—	—	—	—	
RW-1	7215	Decant Tank		Feature	None	N/A	—	—	—	—	—	
RW-1	7216	Corridor No. 2		Detection	700	Ionization	N	N	N	N	N	
RW-1	7216	Corridor No. 2		Feature	None	N/A	—	—	—	—	—	
RW-1	7217	SLWS Monitor Tank Room		Detection	None	N/A	—	—	—	—	—	
RW-1	7217	SLWS Monitor Tank Room		Feature	None	N/A	—	—	—	—	—	
RW-1	7218	Drum Processing Enclosure		Detection	None	N/A	—	—	—	—	—	
RW-1	7218	Drum Processing Enclosure		Feature	None	N/A	—	—	—	—	—	
RW-1	7219	Solidification Control Panel Room		Detection	None	N/A	—	—	—	—	—	
RW-1	7219	Solidification Control Panel Room		Feature	None	N/A	—	—	—	—	—	
RW-1	7220	Valve Room		Detection	None	N/A	—	—	—	—	—	
RW-1	7220	Valve Room		Feature	None	N/A	—	—	—	—	—	
RW-1	7221	Emergency Shower and Eyewash Area		Detection	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
RW-1	7221	Emergency Shower and Eyewash Area		Feature	None	N/A	—	—	—	—	—	
RW-1	7222	Misc. Storage Area		Detection	700	Ionization	N	N	N	N	N	
RW-1	7222	Misc. Storage Area		Feature	None	N/A	—	—	—	—	—	
RW-1	7223	Vestibule		Detection	700	Ionization	N	N	N	N	N	
RW-1	7223	Vestibule		Feature	None	N/A	—	—	—	—	—	
RW-1	7224	High Level Drum Storage Area		Detection	None	N/A	—	—	—	—	—	
RW-1	7224	High Level Drum Storage Area		Feature	None	N/A	—	—	—	—	—	
RW-1	7225	Low Level Drum Storage Area		Detection	None	N/A	—	—	—	—	—	
RW-1	7225	Low Level Drum Storage Area		Feature	None	N/A	—	—	—	—	—	
RW-1	7226	Empty Drum Storage Area		Detection	700	Ionization	N	N	N	N	N	
RW-1	7226	Empty Drum Storage Area		Feature	None	N/A	—	—	—	—	—	
RW-1	7227	Filter Drop Station		Detection	None	N/A	—	—	—	—	—	
RW-1	7227	Filter Drop Station		Feature	None	N/A	—	—	—	—	—	
RW-1	7228	Drywaste Compactor Area		Detection	700	Ionization	N	N	N	N	N	
RW-1	7228	Drywaste Compactor Area		Suppression	SKC33	Wet Pipe	N	N	N	N	N	
RW-1	7228	Drywaste Compactor Area		Feature	None	N/A	—	—	—	—	—	
RW-1	7229	Concentrates Pump Room		Detection	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
RW-1	7229	Concentrates Pump Room		Feature	None	N/A	—	—	—	—	—	
RW-1	7230	Instrument Rack Area		Detection	None	N/A	—	—	—	—	—	
RW-1	7230	Instrument Rack Area		Feature	None	N/A	—	—	—	—	—	
RW-1	7231	Subcoolers and Condenser Room		Detection	None	N/A	—	—	—	—	—	
RW-1	7231	Subcoolers and Condenser Room		Feature	None	N/A	—	—	—	—	—	
RW-1	7232	Electrical Chase		Detection	700	Ionization	N	N	N	N	N	
RW-1	7232	Electrical Chase		Feature	None	N/A	—	—	—	—	—	
RW-1	7233	Area Over Valve Room		Detection	None	N/A	—	—	—	—	—	
RW-1	7233	Area Over Valve Room		Feature	None	N/A	—	—	—	—	—	
RW-1	7301	Radioactive Pipe Chase Area		Detection	None	N/A	—	—	—	—	—	
RW-1	7301	Radioactive Pipe Chase Area		Feature	None	N/A	—	—	—	—	—	
RW-1	7302	HVAC Equipment Area		Detection	None	N/A	—	—	—	—	—	
RW-1	7302	HVAC Equipment Area		Feature	None	N/A	—	—	—	—	—	
RW-1	7303	Vestibule		Detection	None	N/A	—	—	—	—	—	
RW-1	7303	Vestibule		Feature	None	N/A	—	—	—	—	—	
RW-1	7304	MCC Equipment Area		Detection	None	N/A	—	—	—	—	—	
RW-1	7304	MCC Equipment Area		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
RW-1	7305	Electrical Chase		Detection	700	Ionization	N	N	N	N	N	
RW-1	7305	Electrical Chase		Feature	None	N/A	—	—	—	—	—	
RW-1	7401	Filter Compartment		Detection	None	N/A	—	—	—	—	—	
RW-1	7401	Filter Compartment		Detection	None	N/A	—	—	—	—	—	
RW-1	7401	Filter Compartment		Feature	None	N/A	—	—	—	—	—	
RW-1	7402	Valve Compartments		Detection	701	Ionization	N	N	N	N	N	
RW-1	7402	Valve Compartments		Feature	None	N/A	—	—	—	—	—	
RW-1	7403	Corridor		Detection	701, 702	Ionization	N	N	N	N	N	
RW-1	7403	Corridor		Feature	None	N/A	—	—	—	—	—	
RW-1	7404	Valve Compartments		Detection	None	N/A	—	—	—	—	—	
RW-1	7404	Valve Compartments		Feature	None	N/A	—	—	—	—	—	
RW-1	7405	Demineralizer Compartment		Detection	None	N/A	—	—	—	—	—	
RW-1	7405	Demineralizer Compartment		Feature	None	N/A	—	—	—	—	—	
RW-1	7406	Valve Compartment		Detection	None	N/A	—	—	—	—	—	
RW-1	7406	Valve Compartment		Feature	None	N/A	—	—	—	—	—	
RW-1	7407	Fuel Pool Cleanup Demin Compartment		Detection	None	N/A	—	—	—	—	—	
RW-1	7407	Fuel Pool Cleanup Demin Compartment		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
RW-1	7408	Laundry and Hot Shower Tank Area		Detection	None	N/A	—	—	—	—	—	
RW-1	7408	Laundry and Hot Shower Tank Area		Feature	None	N/A	—	—	—	—	—	
RW-1	7409	R.O. Unit Recycle Tank Area		Detection	None	N/A	—	—	—	—	—	
RW-1	7409	R.O. Unit Recycle Tank Area		Feature	None	N/A	—	—	—	—	—	
RW-1	7410	General Floor Area		Detection	702	Ionization	N	N	N	N	N	
RW-1	7410	General Floor Area		Feature	None	N/A	—	—	—	—	—	
RW-1	7411	Waste Monitor Tank and Pump Area		Detection	None	N/A	—	—	—	—	—	
RW-1	7411	Waste Monitor Tank and Pump Area		Feature	None	N/A	—	—	—	—	—	
RW-1	7412	Caustic Tank Area		Detection	None	N/A	—	—	—	—	—	
RW-1	7412	Caustic Tank Area		Feature	None	N/A	—	—	—	—	—	
RW-1	7413	HVAC Platform		Detection	None	N/A	—	—	—	—	—	
RW-1	7413	HVAC Platform		Feature	None	N/A	—	—	—	—	—	
RW-1	7501	General Floor Area (2040' elev.)		Detection	None	N/A	—	—	—	—	—	
RW-1	7501	General Floor Area (2040' elev.)		Feature	None	N/A	—	—	—	—	—	
RW-1	7502	General Floor Area (2041' elev.)		Detection	None	N/A	—	—	—	—	—	
RW-1	7502	General Floor Area (2041' elev.)		Feature	None	N/A	—	—	—	—	—	
RW-1	7503	General Floor Area (2047' elev.)		Detection	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
RW-1	7503	General Floor Area (2047' elev.)		Feature	None	N/A	—	—	—	—	—	
RW-1	7504	Platform (2051' elev.)		Detection	None	N/A	—	—	—	—	—	
RW-1	7504	Platform (2051' elev.)		Feature	None	N/A	—	—	—	—	—	



**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
<b>TB-1</b>		<b>Turbine Building</b>	<b>4.2.4.2</b>									
TB-1	3102	Pipe Space, Tank, and Storage Area		Detection	311	Photoelectric	N	N	N	N	N	
TB-1	3102	Pipe Space, Tank, and Storage Area		Suppression	None	N/A	—	—	—	—	—	
TB-1	3102	Pipe Space, Tank, and Storage Area		Feature	None	N/A	—	—	—	—	—	
TB-1	3103	Stair No. CC-1		Detection	None	N/A	—	—	—	—	—	
TB-1	3103	Stair No. CC-1		Suppression	None	N/A	—	—	—	—	—	
TB-1	3103	Stair No. CC-1		Feature	None	N/A	—	—	—	—	—	
TB-1	3225	Corridor No. 2		Detection	311	Photoelectric	N	N	N	N	N	
TB-1	3225	Corridor No. 2		Suppression	None	N/A	—	—	—	—	—	
TB-1	3225	Corridor No. 2		Feature	None	N/A	—	—	—	—	—	
TB-1	3226	Counting Room		Detection	310	Ionization	N	N	N	N	N	
TB-1	3226	Counting Room		Suppression	None	N/A	—	—	—	—	—	
TB-1	3226	Counting Room		Feature	None	N/A	—	—	—	—	—	
TB-1	3227	Vestibule No.3		Detection	None	N/A	—	—	—	—	—	
TB-1	3227	Vestibule No.3		Suppression	None	N/A	—	—	—	—	—	
TB-1	3227	Vestibule No.3		Feature	None	N/A	—	—	—	—	—	
TB-1	3228	Hot Laboratory		Detection	310	Ionization	N	N	N	N	N	
TB-1	3228	Hot Laboratory		Suppression	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
TB-1	3228	Hot Laboratory		Feature	None	N/A	—	—	—	—	—	
TB-1	3303	Corridor		Detection	311	Photoelectric	N	N	N	N	N	
TB-1	3303	Corridor		Detection	310	Ionization	N	N	N	N	N	
TB-1	3303	Corridor		Suppression	None	N/A	—	—	—	—	—	
TB-1	3303	Corridor		Feature	None	N/A	—	—	—	—	—	
TB-1	3304	General Floor Area		Detection	310	Ionization	N	N	N	N	N	
TB-1	3304	General Floor Area		Suppression	None	N/A	—	—	—	—	—	
TB-1	3304	General Floor Area		Feature	None	N/A	—	—	—	—	—	
TB-1	3307	Combustible Liquids Storage Room		Detection	310	Ionization	N	N	N	N	N	
TB-1	3307	Combustible Liquids Storage Room		Suppression	N/A	Wet Pipe	N	N	N	N	N	*required for Chapter 3 compliance
TB-1	3307	Combustible Liquids Storage Room		Feature	None	N/A	—	—	—	—	—	
TB-1	3402	Corridor No. 3		Detection	311	Photoelectric	N	N	N	N	N	
TB-1	3402	Corridor No. 3		Detection	302	Ionization	N	N	N	N	N	
TB-1	3402	Corridor No. 3		Suppression	None	N/A	—	—	—	—	—	
TB-1	3402	Corridor No. 3		Feature	None	N/A	—	—	—	—	—	
TB-1	3502	Lobby		Detection	302	Ionization	N	N	N	N	N	
TB-1	3502	Lobby		Detection	311	Photoelectric	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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
TB-1	3502	Lobby		Suppression	None	N/A	—	—	—	—	—	
TB-1	3502	Lobby		Feature	None	N/A	—	—	—	—	—	
TB-1	3503	General Floor Area		Detection	302	Ionization	N	N	N	N	N	
TB-1	3503	General Floor Area		Suppression	None	N/A	—	—	—	—	—	
TB-1	3503	General Floor Area		Feature	None	N/A	—	—	—	—	—	
TB-1	3611	Corridor No. 2		Detection	311	Photoelectric	N	N	N	N	N	
TB-1	3611	Corridor No. 2		Suppression	None	N/A	—	—	—	—	—	
TB-1	3611	Corridor No. 2		Feature	None	N/A	—	—	—	—	—	
TB-1	3612	Conference Room		Detection	302	Ionization	N	N	N	N	N	
TB-1	3612	Field Office		Detection	302	Ionization	N	N	N	N	N	
TB-1	3612	Field Office		Suppression	None	N/A	—	—	—	—	—	
TB-1	3612	Conference Room		Suppression	None	N/A	—	—	—	—	—	
TB-1	3612	Conference Room		Feature	None	N/A	—	—	—	—	—	
TB-1	3612	Field Office		Feature	None	N/A	—	—	—	—	—	
TB-1	3613	Computer Room		Detection	313	Photoelectric	N	N	N	N	N	
TB-1	3613	Computer Room		Detection	312	Ionization	N	N	N	N	N	
TB-1	3613	Computer Room		Suppression	SKC47	Pre-action	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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
TB-1	3613	Computer Room		Feature	None	N/A	—	—	—	—	—	
TB-1	3613A	Work Control Area		Detection	313	Ionization	N	N	N	N	N	
TB-1	3613A	Work Control Area		Suppression	SKC47	Pre-action	N	N	N	N	N	
TB-1	3613A	Work Control Area		Feature	None	N/A	—	—	—	—	—	
TB-1	3613B	Equipment Operator's Room		Detection	313	Thermal	N	N	N	N	N	
TB-1	3613B	Equipment Operator's Room		Detection	312	Ionization	N	N	N	N	N	
TB-1	3613B	Equipment Operator's Room		Detection	312	Ionization	N	N	N	N	N	
TB-1	3613B	Equipment Operator's Room		Suppression	SKC47	Pre-action	N	N	N	N	N	
TB-1	3613B	Equipment Operator's Room		Feature	None	N/A	—	—	—	—	—	
TB-1	3614	Corridor No. 3		Detection	302	Ionization	N	N	N	N	N	
TB-1	3614	Corridor No. 3		Suppression	None	N/A	—	—	—	—	—	
TB-1	3614	Corridor No. 3		Feature	None	N/A	—	—	—	—	—	
TB-1	3619	General Floor Area		Detection	None	N/A	—	—	—	—	—	
TB-1	3619	General Floor Area		Suppression	None	N/A	—	—	—	—	—	
TB-1	3619	General Floor Area		Feature	None	N/A	—	—	—	—	—	
TB-1	3620	Women's Toilet		Detection	302	Ionization	N	N	N	N	N	
TB-1	3620	Women's Toilet		Suppression	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
TB-1	3620	Women's Toilet		Feature	None	N/A	—	—	—	—	—	
TB-1	3621	Men's Toilet		Detection	302	Ionization	N	N	N	N	N	
TB-1	3621	Men's Toilet		Suppression	None	N/A	—	—	—	—	—	
TB-1	3621	Men's Toilet		Feature	None	N/A	—	—	—	—	—	
TB-1	3701	General Floor Area		Detection	302	Ionization	N	N	N	N	N	
TB-1	3701	General Floor Area		Suppression	None	N/A	—	—	—	—	—	
TB-1	3701	General Floor Area		Feature	None	N/A	—	—	—	—	—	
TB-1	3702	Battery Room		Detection	302	Ionization	N	N	N	N	N	
TB-1	3702	Battery Room		Suppression	None	N/A	—	—	—	—	—	
TB-1	3702	Battery Room		Feature	None	N/A	—	—	—	—	—	
TB-1	3703	Radio Equipment Room		Detection	302	Ionization	N	N	N	N	N	
TB-1	3703	Radio Equipment Room		Suppression	None	N/A	—	—	—	—	—	
TB-1	3703	Radio Equipment Room		Feature	None	N/A	—	—	—	—	—	
TB-1	3704	General Floor Area		Detection	302	Ionization	N	N	N	N	N	
TB-1	3704	General Floor Area		Suppression	None	N/A	—	—	—	—	—	
TB-1	3704	General Floor Area		Feature	None	N/A	—	—	—	—	—	
TB-1	3705	Battery Room		Detection	302	Ionization	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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
TB-1	3705	Battery Room		Suppression	None	N/A	—	—	—	—	—	
TB-1	3705	Battery Room		Feature	None	N/A	—	—	—	—	—	
TB-1	3706	Fire Brigade Storage Area		Detection	None	N/A	—	—	—	—	—	
TB-1	3706	EO's Office		Detection	None	N/A	—	—	—	—	—	
TB-1	3706	EO's Office		Suppression	None	N/A	—	—	—	—	—	
TB-1	3706	Fire Brigade Storage Area		Suppression	None	N/A	—	—	—	—	—	
TB-1	3706	EO's Office		Feature	None	N/A	—	—	—	—	—	
TB-1	3706	Fire Brigade Storage Area		Feature	None	N/A	—	—	—	—	—	
TB-1	3802	Elevator No. 1 Machine Room		Detection	302	Ionization	N	N	N	N	N	
TB-1	3802	Elevator No. 1 Machine Room		Suppression	None	N/A	—	—	—	—	—	
TB-1	3802	Elevator No. 1 Machine Room		Feature	None	N/A	—	—	—	—	—	
TB-1	3803	Corridor		Detection	302	Ionization	N	N	N	N	N	
TB-1	3803	Corridor		Suppression	None	N/A	—	—	—	—	—	
TB-1	3803	Corridor		Feature	None	N/A	—	—	—	—	—	
TB-1	4101	Stair T-1		Detection	None	N/A	—	—	—	—	—	
TB-1	4101	Stair T-1		Suppression	None	N/A	—	—	—	—	—	
TB-1	4101	Stair T-1		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
TB-1	4201	Condenser Pit - General Floor Area		Detection	400	Ionization	N	N	N	N	N	
TB-1	4201	Condenser Pit - General Floor Area		Detection	401	Photoelectric	N	N	N	N	N	
TB-1	4201	Condenser Pit - General Floor Area		Suppression	SKC32	Wet Pipe	N	N	Y	Y	N	
TB-1	4201	Condenser Pit - General Floor Area		Feature	None	N/A	—	—	—	—	—	
TB-1	4203	SGFP Turbine Lube Oil Conditioners - Cond Pump Area		Detection	409	Thermal	N	N	N	N	N	
TB-1	4203	SGFP Turbine Lube Oil Conditioners - Cond Pump Area		Detection	410	Thermal	N	N	N	N	N	
TB-1	4203	SGFP Turbine Lube Oil Conditioners - Cond Pump Area		Suppression	SKC32	Wet Pipe	N	N	Y	Y	N	
TB-1	4203	SGFP Turbine Lube Oil Conditioners - Cond Pump Area		Feature	None	N/A	—	—	—	—	—	
TB-1	4204	Secondary Liquid Waste Collection Tank Pumps		Detection	411	Ionization	N	N	N	N	N	
TB-1	4204	Secondary Liquid Waste Collection Tank Pumps		Suppression	SKC32	Wet Pipe	N	N	Y	Y	N	
TB-1	4204	Secondary Liquid Waste Collection Tank Pumps		Feature	None	N/A	—	—	—	—	—	
TB-1	4205	High TDS and Low TDS Tank and Pump Area		Detection	None	N/A	—	—	—	—	—	
TB-1	4205	High TDS and Low TDS Tank and Pump Area		Suppression	SKC32	Wet Pipe	N	N	Y	Y	N	
TB-1	4205	High TDS and Low TDS Tank and Pump Area		Feature	None	N/A	—	—	—	—	—	
TB-1	4301	General Floor Area SW and SE		Detection	410	Thermal	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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
TB-1	4301	General Floor Area SW and SE		Detection	409	Thermal	N	N	N	N	N	
TB-1	4301	General Floor Area SW and SE		Detection	405	Thermal	N	N	Y	Y	N	
TB-1	4301	General Floor Area SW and SE		Detection	403	Thermal	N	N	Y	Y	N	
TB-1	4301	General Floor Area SW and SE		Detection	401	Photoelectric	N	N	N	N	N	
TB-1	4301	General Floor Area SW and SE		Suppression	SKC24	Water Spray	N	N	N	N	N	
TB-1	4301	General Floor Area SW and SE		Suppression	SKC23	Water Spray	N	N	N	N	N	
TB-1	4301	General Floor Area SW and SE		Suppression	SKC29	Pre-action	N	N	Y	Y	N	
TB-1	4301	General Floor Area SW and SE		Suppression	SKC31	Pre-action	N	N	Y	Y	N	
TB-1	4301	General Floor Area SW and SE		Feature	None	N/A	—	—	—	—	—	
TB-1	4302	Condenser Vacuum Pump Area		Detection	405	Thermal	N	N	Y	Y	N	
TB-1	4302	Condenser Vacuum Pump Area		Suppression	SKC29	Pre-action	N	N	Y	Y	N	
TB-1	4302	Condenser Vacuum Pump Area		Feature	None	N/A	—	—	—	—	—	
TB-1	4303	Air Compressor Area		Detection	405	Thermal	N	N	Y	Y	N	
TB-1	4303	Air Compressor Area		Suppression	SKC29	Pre-action	N	N	Y	Y	N	
TB-1	4303	Air Compressor Area		Feature	None	N/A	—	—	—	—	—	
TB-1	4304	Men's Toilet		Detection	None	N/A	—	—	—	—	—	
TB-1	4304	Men's Toilet		Suppression	None	N/A	—	—	—	—	—	



**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
TB-1	4304	Men's Toilet		Feature	None	N/A	—	—	—	—	—	
TB-1	4305	Women's Toilet		Detection	None	N/A	—	—	—	—	—	
TB-1	4305	Women's Toilet		Suppression	None	N/A	—	—	—	—	—	
TB-1	4305	Women's Toilet		Feature	None	N/A	—	—	—	—	—	
TB-1	4306	Janitor's Closet		Detection	None	N/A	—	—	—	—	—	
TB-1	4306	Janitor's Closet		Suppression	None	N/A	—	—	—	—	—	
TB-1	4306	Janitor's Closet		Feature	None	N/A	—	—	—	—	—	
TB-1	4308	Lube Oil Storage Tanks		Detection	400	Flame	N	N	N	N	N	
TB-1	4308	Lube Oil Storage Tanks		Suppression	SKC08	Wet Pipe	N	N	N	N	N	
TB-1	4308	Lube Oil Storage Tanks		Feature	None	N/A	—	—	—	—	—	
TB-1	4309	Stair T-2		Detection	None	N/A	—	—	—	—	—	
TB-1	4309	Stair T-2		Suppression	None	N/A	—	—	—	—	—	
TB-1	4309	Stair T-2		Feature	None	N/A	—	—	—	—	—	
TB-1	4310	Stair T-3		Detection	None	N/A	—	—	—	—	—	
TB-1	4310	Stair T-3		Suppression	None	N/A	—	—	—	—	—	
TB-1	4310	Stair T-3		Feature	None	N/A	—	—	—	—	—	
TB-1	4312	Stair T-5		Detection	None	N/A	—	—	—	—	—	



**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
TB-1	4312	Stair T-5		Suppression	None	N/A	—	—	—	—	—	
TB-1	4312	Stair T-5		Feature	None	N/A	—	—	—	—	—	
TB-1	4313	Stair T-4		Detection	None	N/A	—	—	—	—	—	
TB-1	4313	Stair T-4		Suppression	None	N/A	—	—	—	—	—	
TB-1	4313	Stair T-4		Feature	None	N/A	—	—	—	—	—	
TB-1	4314	Stair T-6		Detection	None	N/A	—	—	—	—	—	
TB-1	4314	Stair T-6		Suppression	None	N/A	—	—	—	—	—	
TB-1	4314	Stair T-6		Feature	None	N/A	—	—	—	—	—	
TB-1	4316	Condensate Polishing Area		Detection	403	Thermal	N	N	Y	Y	N	
TB-1	4316	Condensate Polishing Area		Suppression	SKC31	Pre-action	N	N	Y	Y	N	
TB-1	4316	Condensate Polishing Area		Feature	None	N/A	—	—	—	—	—	
TB-1	4317	Process Sampling Lab		Detection	414	Ionization	N	N	N	N	N	
TB-1	4317	Process Sampling Lab		Suppression	None	N/A	—	—	—	—	—	
TB-1	4317	Process Sampling Lab		Feature	None	N/A	—	—	—	—	—	
TB-1	4318	Closed Cooling Water Heat Exchanger Area		Detection	403	Thermal	N	N	Y	Y	N	
TB-1	4318	Closed Cooling Water Heat Exchanger Area		Suppression	SKC31	Pre-action	N	N	Y	Y	N	
TB-1	4318	Closed Cooling Water Heat Exchanger Area		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
TB-1	4319	Condensate Chemical Add Units		Detection	403	Thermal	N	N	Y	Y	N	
TB-1	4319	Condensate Chemical Add Units		Suppression	SKC31	Pre-action	N	N	Y	Y	N	
TB-1	4319	Condensate Chemical Add Units		Feature	None	N/A	—	—	—	—	—	
TB-1	4321	Railroad Bay and Laydown Area		Detection	403	Thermal	N	N	Y	Y	N	
TB-1	4321	Railroad Bay and Laydown Area		Suppression	SKC31	Pre-action	N	N	Y	Y	N	
TB-1	4321	Railroad Bay and Laydown Area		Feature	None	N/A	—	—	—	—	—	
TB-1	4322	Truck Bay and Laydown Area		Detection	405	Thermal	N	N	Y	Y	N	
TB-1	4322	Truck Bay and Laydown Area		Suppression	SKC29	Pre-action	N	N	Y	Y	N	
TB-1	4322	Truck Bay and Laydown Area		Feature	None	N/A	—	—	—	—	—	
TB-1	4323	Cold Chemistry Lab		Detection	414	Ionization	N	N	N	N	N	
TB-1	4323	Cold Chemistry Lab		Suppression	None	N/A	—	—	—	—	—	
TB-1	4323	Cold Chemistry Lab		Feature	None	N/A	—	—	—	—	—	
TB-1	4351	Floor		Detection	405	Thermal	N	N	Y	Y	N	
TB-1	4351	Floor		Suppression	SKC29	Pre-action	N	N	Y	Y	N	
TB-1	4351	Floor		Feature	None	N/A	—	—	—	—	—	
TB-1	4401	General Floor Area		Detection	401	Photoelectric	N	N	N	N	N	
TB-1	4401	General Floor Area		Detection	407	Thermal	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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
TB-1	4401	General Floor Area		Detection	404	Thermal	N	N	Y	Y	N	
TB-1	4401	General Floor Area		Detection	402	Thermal	N	N	Y	Y	N	
TB-1	4401	General Floor Area		Suppression	SKC11	Water Spray	N	N	N	N	N	for the Hydrogen Seal Oil skid
TB-1	4401	General Floor Area		Suppression	SKC28	Pre-action	N	N	Y	Y	N	
TB-1	4401	General Floor Area		Suppression	SKC30	Pre-action	N	N	Y	Y	N	
TB-1	4401	General Floor Area		Feature	None	N/A	—	—	—	—	—	
TB-1	4402	Battery Room (SE)		Detection	400	Ionization	N	N	N	N	N	
TB-1	4402	Battery Room (SE)		Suppression	None	N/A	—	—	—	—	—	
TB-1	4402	Battery Room (SE)		Feature	None	N/A	—	—	—	—	—	
TB-1	4403	Lube Oil Reservoir Room		Detection	400	Flame	N	N	N	N	N	
TB-1	4403	Lube Oil Reservoir Room		Suppression	SKC10	Wet Pipe	N	N	N	N	N	
TB-1	4403	Lube Oil Reservoir Room		Feature	None	N/A	—	—	—	—	—	
TB-1	4404	Battery Room (NW)		Detection	412	Photoelectric	N	N	N	N	N	
TB-1	4404	Battery Room (NW)		Suppression	None	N/A	—	—	—	—	—	
TB-1	4404	Battery Room (NW)		Feature	None	N/A	—	—	—	—	—	
TB-1	4501	General Floor Area (North and South of Column Line T-6)		Detection	408	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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
TB-1	4501	General Floor Area (North and South of Column Line T-6)		Detection	401	Photoelectric	N	N	N	N	N	
TB-1	4501	General Floor Area (North and South of Column Line T-6)		Suppression	SKC21	Pre-action	N	N	Y	Y	N	for the turbine bearings
TB-1	4501	General Floor Area (North and South of Column Line T-6)		Feature	None	N/A	—	—	—	—	—	
TB-1	4502	Women's Toilet		Detection	None	N/A	—	—	—	—	—	
TB-1	4502	Women's Toilet		Suppression	None	N/A	—	—	—	—	—	
TB-1	4502	Women's Toilet		Feature	None	N/A	—	—	—	—	—	
TB-1	4503	Men's Toilet		Detection	None	N/A	—	—	—	—	—	
TB-1	4503	Men's Toilet		Suppression	None	N/A	—	—	—	—	—	
TB-1	4503	Men's Toilet		Feature	None	N/A	—	—	—	—	—	
TB-1	4504	EHC Control Cabinet Room		Detection	413	Photoelectric	N	N	N	N	N	
TB-1	4504	EHC Control Cabinet Room		Suppression	None	N/A	—	—	—	—	—	
TB-1	4504	EHC Control Cabinet Room		Feature	None	N/A	—	—	—	—	—	
TB-1	4505	General Floor Area		Detection	None	N/A	—	—	—	—	—	
TB-1	4505	General Floor Area		Suppression	None	N/A	—	—	—	—	—	
TB-1	4505	General Floor Area		Feature	None	N/A	—	—	—	—	—	
TB-1	4506	Room 4506		Detection	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
TB-1	4506	Room 4506		Suppression	None	N/A	—	—	—	—	—	
TB-1	4506	Room 4506		Feature	None	N/A	—	—	—	—	—	
TB-1	4601	Elevator Machine Room		Detection	None	N/A	—	—	—	—	—	
TB-1	4601	Elevator Machine Room		Suppression	None	N/A	—	—	—	—	—	
TB-1	4601	Elevator Machine Room		Feature	None	N/A	—	—	—	—	—	
<b>UNCT UHS North Cooling Tower 4.2.3.2</b>												
UNCT	U-301	North Side Electrical Room		Detection	002	Ionization	N	N	N	N	N	
UNCT	U-301	North Side Electrical Room		Suppression	None	N/A	—	—	—	—	—	
UNCT	U-301	North Side Electrical Room		Feature	None	N/A	—	—	—	—	—	
UNCT	U-302	North Side Electrical Room		Detection	None	N/A	—	—	—	—	—	
UNCT	U-302	North Side Electrical Room		Suppression	None	N/A	—	—	—	—	—	
UNCT	U-302	North Side Electrical Room		Feature	None	N/A	—	—	—	—	—	
UNCT	U-306	UHS North Cooling Tower		Detection	None	N/A	—	—	—	—	—	
UNCT	U-306	UHS North Cooling Tower		Suppression	None	N/A	—	—	—	—	—	
UNCT	U-306	UHS North Cooling Tower		Feature	None	N/A	—	—	—	—	—	



**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
UNPH		Essential Service Water Pump Room A	4.2.3.2									
UNPH	U-104	Pump Room A		Detection	002	Ionization	N	N	N	N	N	
UNPH	U-104	Pump Room A		Suppression	None	N/A	—	—	—	—	—	
UNPH	U-104	Pump Room A		Feature	None	N/A	—	—	—	—	—	
USCT		UHS South Cooling Tower	4.2.3.2									
USCT	U-304	South Side Electrical Room		Detection	001	Ionization	N	N	N	N	N	
USCT	U-304	South Side Electrical Room		Suppression	None	N/A	—	—	—	—	—	
USCT	U-304	South Side Electrical Room		Feature	None	N/A	—	—	—	—	—	
USCT	U-305	South Side Electrical Room		Detection	None	N/A	—	—	—	—	—	
USCT	U-305	South Side Electrical Room		Suppression	None	N/A	—	—	—	—	—	
USCT	U-305	South Side Electrical Room		Feature	None	N/A	—	—	—	—	—	
USCT	U-307	UHS South Cooling Tower		Detection	None	N/A	—	—	—	—	—	
USCT	U-307	UHS South Cooling Tower		Suppression	None	N/A	—	—	—	—	—	
USCT	U-307	UHS South Cooling Tower		Feature	None	N/A	—	—	—	—	—	

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
USPH		Essential Service Water Pump Room B	4.2.3.2									
USPH	U-105	Pump Room B		Detection	001	Ionization	N	N	N	N	N	
USPH	U-105	Pump Room B		Suppression	None	N/A	—	—	—	—	—	
USPH	U-105	Pump Room B		Feature	None	N/A	—	—	—	—	—	



**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
<b>YD-1</b>	<b>Yard Area</b>	<b>4.2.4.2</b>										
YD-1	FPH	Fire Water Pump House		Suppression	SKC1040	Wet Pipe	Y*	N	N	N	N	*required for Chapter 3 compliance
YD-1	FPH	Fire Water Pump House		Feature	None	N/A	—	—	—	—	—	
YD-1	XMA01A	Location is not a plant fire zone. See note.		Detection	003/004	Thermal	N	N	N	N	N	transformer ID used in lieu of a fire zone for location purposes
YD-1	XMA01A	Location is not a plant fire zone. See note.		Suppression	SKC12	Water Spray	N	N	N	N	N	transformer ID used in lieu of a fire zone for location purposes
YD-1	XMA01A	Location is not a plant fire zone. See note.		Feature	None	N/A	—	—	—	—	—	transformer ID used in lieu of a fire zone for location purposes
YD-1	XMA01B	Location is not a plant fire zone. See note.		Detection	005/006	Thermal	N	N	N	N	N	transformer ID used in lieu of a fire zone for location purposes
YD-1	XMA01B	Location is not a plant fire zone. See note.		Suppression	SKC13	Water Spray	N	N	N	N	N	transformer ID used in lieu of a fire zone for location purposes
YD-1	XMA01B	Location is not a plant fire zone. See note.		Feature	None	N/A	—	—	—	—	—	transformer ID used in lieu of a fire zone for location purposes
YD-1	XMA01C	Location is not a plant fire zone. See note.		Detection	007/008	Thermal	N	N	N	N	N	transformer ID used in lieu of a fire zone for location purposes
YD-1	XMA01C	Location is not a plant fire zone. See note.		Suppression	SKC14	Water Spray	N	N	N	N	N	transformer ID used in lieu of a fire zone for location purposes
YD-1	XMA01C	Location is not a plant fire zone. See note.		Feature	None	N/A	—	—	—	—	—	transformer ID used in lieu of a fire zone for location purposes
YD-1	XMA02	Location is not a plant fire zone. See note.		Detection	011	Thermal	N	N	N	N	N	transformer ID used in lieu of a fire zone for location purposes

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
YD-1	XMA02	Location is not a plant fire zone. See note.		Suppression	SKC15	Water Spray	N	N	N	N	N	transformer ID used in lieu of a fire zone for location purposes
YD-1	XMA02	Location is not a plant fire zone. See note.		Feature	None	N/A	—	—	—	—	—	transformer ID used in lieu of a fire zone for location purposes
YD-1	XMR01	Location is not a plant fire zone. See note.		Detection	012/013	Thermal	N	N	N	N	N	transformer ID used in lieu of a fire zone for location purposes
YD-1	XMR01	Location is not a plant fire zone. See note.		Suppression	SKC16	Water Spray	N	N	N	N	N	transformer ID used in lieu of a fire zone for location purposes
YD-1	XMR01	Location is not a plant fire zone. See note.		Feature	None	N/A	—	—	—	—	—	transformer ID used in lieu of a fire zone for location purposes
YD-1	XNB01	Location is not a plant fire zone. See note.		Detection	016	Thermal	N	N	N	N	N	transformer ID used in lieu of a fire zone for location purposes
YD-1	XNB01	Location is not a plant fire zone. See note.		Suppression	SKC19	Water Spray	N	N	N	N	N	transformer ID used in lieu of a fire zone for location purposes
YD-1	XNB01	Location is not a plant fire zone. See note.		Feature	None	N/A	—	—	—	—	—	transformer ID used in lieu of a fire zone for location purposes
YD-1	XNB02	Location is not a plant fire zone. See note.		Detection	017	Thermal	N	N	N	N	N	transformer ID used in lieu of a fire zone for location purposes
YD-1	XNB02	Location is not a plant fire zone. See note.		Suppression	SKC20	Water Spray	N	N	N	N	N	transformer ID used in lieu of a fire zone for location purposes
YD-1	XNB02	Location is not a plant fire zone. See note.		Feature	None	N/A	—	—	—	—	—	transformer ID used in lieu of a fire zone for location purposes
YD-1	XPB03	Location is not a plant fire zone. See note.		Detection	014	Thermal	N	N	N	N	N	transformer ID used in lieu of a fire zone for location purposes

**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	Category	ID	Type	Required?					Required Fire Protection Feature and System Details
							S	L	E	R	D	
YD-1	XPB03	Location is not a plant fire zone. See note.		Suppression	SKC17	Water Spray	N	N	N	N	N	transformer ID used in lieu of a fire zone for location purposes
YD-1	XPB03	Location is not a plant fire zone. See note.		Feature	None	N/A	—	—	—	—	—	transformer ID used in lieu of a fire zone for location purposes
YD-1	XPB04	Location is not a plant fire zone. See note.		Detection	015	Thermal	N	N	N	N	N	transformer ID used in lieu of a fire zone for location purposes
YD-1	XPB04	Location is not a plant fire zone. See note.		Suppression	SKC18	Water Spray	N	N	N	N	N	transformer ID used in lieu of a fire zone for location purposes
YD-1	XPB04	Location is not a plant fire zone. See note.		Feature	None	N/A	—	—	—	—	—	transformer ID used in lieu of a fire zone for location purposes

**Legend:**

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 an Adequate Balance of Defense-in-Depth in a Change Evaluation or Fire Risk Evaluation

#### **4.8.2 Plant Modifications and Items to be Completed During the Implementation Phase**

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 planned implementation of the modifications listed in Attachment S.

Following completion of the implementation items listed in Attachment S, such as further development of procedure changes and training, additional refinements may need to be incorporated into the FPRA. During the implementation phase there may also be refinements to the FPRA based on industry-initiatives. As the FPRA refinements are made, some adjustments to the list of Recovery Actions provided in Attachment G may be warranted prior to completion of implementation. Any changes to the list of Recovery Actions will be evaluated using the same process used in Attachments G and W of this submittal.

Table S-1 summarizes plant modifications associated with the transition to NFPA 805 that have already been implemented. Table S-2 summarizes plant modifications that are committed for implementation. Table S-3 provides a list of those items (procedure changes, process updates, and training of affected plant personnel) that will be completed prior to the implementation of the new NFPA 805 FP program at Callaway Plant.

#### **4.8.3 Supplemental Information – Other Callaway Plant Specific Issues**

##### **4.8.3.1 Request for Approval of Change to Technical Specification Requirement**

NRC Approval is being requested to eliminate the requirement to initiate a plant shutdown in accordance with Technical Specification LCO 3.0.3 in the event of a loss of the normal fire suppression water system and inability to establish a back-up water system in 24 hours.

On February 19, 1987 Union Electric Company submitted a license amendment request via ULNRC-01447 to delete fire protection Technical Specifications and relocate those requirements to the FSAR under licensee control in accordance with Generic Letter 86-10, "Implementation of Fire Protection Requirements."

On October 30, 1987 Union Electric Company responded to NRC questions related to this license amendment request via ULNRC-01667. Specifically, the following question and response is documented in ULNRC-01667.

##### NRC Question

The shutdown requirement of Specification 3.7.10.1 ACTION b should be retained in an appropriate commitment document.

##### Response

As part of implementing the proposed revisions to the Technical Specifications, the requirements of Specification 3.7.10.1 ACTION b will be retained and will not be modified without prior approval from the Nuclear Regulatory Commission (NRC). The 'requirements of Specification 3.7.10.1 ACTION b will be added' to FSAR (USAR for Wolf Creek) Table 9.5.1-2 with a statement that no modifications to these requirements will be made without prior approval of the NRC.

On January 13, 1988 the NRC issued Amendment No. 30 to Facility Operating License No. NPF-30. In the accompanying safety evaluation the staff noted the following:

The licensee had originally proposed to delete the shutdown requirement of Specification 3.7.10.1 Action b. The staff's position is that the loss of the normal fire protection water supply and the inability to establish a back-up fire suppression water

system within 24 hours warrant plant shutdown. The licensee responded that the requirements of Specification 3.7.10.1 Action b. will be added to the FSAR with commitment that no modifications to these requirements will be made without prior approval from NRC. The staff considers this response to be acceptable.

In response to the above, Callaway Plant has maintained the following statement in FSAR Table 9.5.1-2 for the Fire Suppression Water System, requirements a, b and c.

With the Fire Suppression Water System in this condition, establish a backup Fire Suppression Water System within 24 hours. If this required action cannot be met, the requirements of Technical Specification 3.0.3 shall be initiated. Modifications to these requirements shall not be made without prior approval of the NRC.

As part of the transition to NFPA 805, it is being requested that the NRC Staff review and approve the removal of the existing requirement in FSAR Table 9.5.1-2 to enter Technical Specification LCO 3.0.3 for an inoperable Fire Suppression Water System coupled with the inability to provide a backup fire suppression water system within 24 hours.

NFPA 805 Section 3.2.3(2) requires compensatory actions to be implemented when fire protection systems and other systems credited by the fire protection program cannot perform their intended function. NFPA 805 Section 3.2.3(2) also requires that limits be established on the impairment duration. As stated in Attachment A, NEI 04-02 Table B-1, Callaway Plant procedure APA-ZZ-00703, "Fire Protection Operability Criteria and Surveillance Requirements," will be used to establish the required compensatory actions and impairment durations following the transition to NFPA 805. FSAR Table 9.5.1-2 will be eliminated following the transition to NFPA 805.

Justification for this request is documented in Attachment X, Approval Request 1.

#### **4.8.3.2 Request for Approval of Specific Current Transformer Configurations**

NRC Approval is being requested for a deviation from the common enclosure analysis requirements of NFPA 805 Section 2.4.2 for specific current transformer (CT) configurations where a fire induced open circuit failure could result in a secondary fire.

A fire in plant fire area C-21, Lower Cable Spreading Room, or in plant fire area C-27, Main Control Room, could result in an open circuit failure for circuits associated with the Main Generator CTs. Due to the design of these CTs, a secondary fire due to overheating can be postulated to occur in plant fire area TB-1.

Section 2.4.2 of NFPA 805 requires consideration of fire-induced open circuit failure modes and specifies that circuits which share a common enclosure with circuits required to achieve the nuclear safety performance criteria, be evaluated to ensure that such electrical faults will not cause the fire to extend beyond the immediate (initial) fire area. As discussed in NFPA 805 B.3.4.2 the evaluation of common enclosure issues should include consideration of CTs that are constructed such that an open secondary circuit could cause ignition of the transformer.

As part of the transition to NFPA 805, it is being requested that the NRC Staff review and approve a deviation from the common enclosure requirements of NFPA 805 for the Main Generator CTs.

Justification for this request is documented in Attachment X, Approval Request 2.

**4.8.3.3 Request for Approval of Specific NSCA Separation Issues in the Reactor Building**

NRC approval is being requested for deviations from the deterministic requirements of NFPA 805 Section 4.2.3.4 for five (5) specific Reactor Building (RB) configurations where twenty or more feet of separation is present but is not free of intervening combustibles.

As part of the transition to NFPA 805, it is being requested that the NRC Staff review and approve these deviations from these deterministic separation requirements of NFPA 805 for the five (5) specific Reactor Building (RB) configurations.

Justification for this request is documented in Attachment X, Approval Request 3.

## 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), Appendix R, and Section (f), "Decommissioning."

The voluntary adoption of 10 CFR 50.48(c) by Ameren Missouri does not eliminate the need to comply with 10 CFR 50.48(a) and 10 CFR 50, Appendix A, GDC 3, "Fire Protection." The NRC addressed the overall adequacy of the regulations during the promulgation of 10 CFR 50.48(c) (Reference FR Notice 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." (Reference FR Notice 69 FR 33536 dated June 16, 2004, ML041340086)*

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 Revision 2 (ML081400292), 10 CFR 50.48(a) and GDC 3 clarification. The following tables provide a cross reference of fire protection regulations associated with the post-transition fire protection program and applicable industry and Callaway Plant documents that address the topic.

### 10 CFR 50.48(a)

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

<b>10 CFR 50.48(a) Section(s)</b>	<b>Applicability/Compliance Reference</b>
(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 below
(i) Describe the overall fire protection program for the facility;	NFPA 805 Section 3.2 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 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 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 NEI 04-02 Tables B-1 and B-3
(2) The plan must also describe specific features necessary to implement the program described in paragraph (a)(1) of this section such as:	See below
(i) Administrative controls and personnel requirements for fire prevention and manual fire suppression activities;	NFPA 805 Sections 3.3.1 and 3.4 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 NEI 04-02 Tables B-1 and B-3
(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 NEI 04-02 Table B-3
(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. APA-ZZ-00209, Records Identification, Retention and Destruction, provides station direction for the retention of records. Records associated with the fire protection plan and associated procedures are considered an augmented quality program, maintained as QA records for the life of the plant.
(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. Callaway Plant is licensed under 10 CFR 50.

**General Design Criterion 3****Table 5-2 – GDC 3 – Applicability/Compliance Reference**

<b>GDC 3, Fire Protection, Statement</b>	<b>Applicability/Compliance Reference</b>
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.	NFPA 805 Chapters 3 and 4 NEI 04-02 Tables B-1 and B-3
Noncombustible and heat resistant materials shall be used wherever practical throughout the unit, particularly in locations such as the containment and control room.	NFPA 805 Sections 3.3.2, 3.3.3, 3.3.4, 3.11.4 NEI 04-02 Table B-1
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.	NFPA 805 Chapters 3 and 4 NEI 04-02 Tables B-1 and B-3
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	NFPA 805 Sections 3.4 through 3.10 and 4.2.1 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) <i>Approval of incorporation by reference.</i> 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) <i>Life Safety Goal, Objectives, and Criteria.</i> 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 LAR.
(ii) <i>Plant Damage/Business Interruption Goal, Objectives, and Criteria.</i> 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 LAR.
(iii) <i>Use of feed-and-bleed.</i> 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 NEI 04-02 Table B-1.
(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.	Callaway Plant "Complies by Previous NRC Approval". See Attachment A, 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
<p>(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;</p> <p>(A) Satisfies the performance goals, performance objectives, and performance criteria specified in NFPA 805 related to nuclear safety and radiological release;</p> <p>(B) Maintains safety margins; and</p> <p>(C) Maintains fire protection defense-in-depth (fire prevention, fire detection, fire suppression, mitigation, and post-fire safe shutdown capability).</p>	<p>The use of performance-based methods for NFPA 805 Chapter 3 is requested. See Attachment L.</p>
(3) <i>Compliance with NFPA 805.</i>	See below
<p>(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.</p>	<p>The LAR was submitted in accordance with 10 CFR 50.90. The LAR included applicable license conditions, Technical Specifications/bases that needed to be revised and/or superseded.</p>
<p>(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.</p>	<p>The LAR and transition report summarize the evaluations and analyses performed in accordance with Chapter 2 of NFPA 805.</p>
<p>(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:</p> <p>(i) Satisfy the performance goals, performance objectives, and performance criteria specified in NFPA 805 related to nuclear safety and radiological release;</p> <p>(ii) Maintain safety margins; and</p> <p>(iii) Maintain fire protection defense-in-depth (fire prevention, fire detection, fire suppression, mitigation, and post-fire safe shutdown capability).</p>	<p>No risk-informed or performance-based alternatives to compliance with NFPA 805 (per 10 CFR 50.48(c)(4)) were utilized. See Attachment P.</p>

## **5.2 Regulatory Topics**

### **5.2.1 License Condition Changes**

The current Callaway Plant fire protection license condition 2.C(5) is being 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**

Ameren Missouri conducted a review of the Technical Specifications to determine which Technical Specifications, including Technical Specification Bases, are required to be revised, deleted, or superseded. Ameren Missouri determined that the changes to the Technical Specifications and Bases and applicable justification listed in Attachment N are adequate for the adoption of the new fire protection licensing basis.

### **5.2.3 Orders and Exemptions**

A review was conducted of the Callaway Plant 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**

### **5.3.1 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 in Attachment Q, (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. Ameren Missouri has evaluated the proposed amendment and determined that it involves no significant hazards consideration.

### **5.3.2 Environmental Consideration**

Pursuant to 10 CFR 51.22(b), an evaluation of the LAR 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 LAR 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**

The following schedule for transitioning Callaway Plant to the new fire protection licensing basis requires NRC approval in accordance with the following schedule:

- Implementation of new NFPA 805 fire protection program to include procedure changes, process updates, and training of affected plant personnel. This will be the later of 6 months after Refueling Outage 19 (currently scheduled for Spring of 2013) or 6 months after NRC approval.
- Attachment S provides a listing of plant modifications associated with the transition to NFPA 805 and their implementation status (open or complete). Currently open modifications will be field completed no later than June 30, 2013. Appropriate compensatory measures for any incomplete NFPA 805 related modifications will be maintained until the modifications are complete.

## 6.0 REFERENCES

The following references were used in the development of the TR. Additional references are in the NEI 04-02 Tables in the various Attachments.

- 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, April 2008.
- 6.4 Union Electric Company Letter to the NRC, ULNRC-05232, "Letter of Intent to Adopt NFPA 805, 'Performance-Based Standard for Fire Protection for Light Water Reactor Generating Plants, 2001 Edition,'" dated December 2, 2005 (ML053420340).
- 6.5 NRC Letter to AmerenUE "NRC Response to AmerenUE's Letter of Intent to Adopt 10 CFR 50.48(c) (NFPA 805 Rule) for Callaway Plant, Unit 1," dated January 31, 2006 (ML053530018).
- 6.6 NRC Enforcement Policy: Extension of Discretion Period of Interim Enforcement Policy; Federal Register Notice 19905, Vol. 71, No. 74 dated Tuesday, April 18, 2006.
- 6.7 Union Electric Company Letter to the NRC, ULNRC-05342, "Clarification of Letter of Intent to Adopt NFPA 805 'Performance-Based Standard for Fire Protection for Light Water Reactor Generating Plants, 2001 Edition,'" dated November 14, 2006.
- 6.8 Union Electric Company Letter to the NRC, ULNRC-05541, AmerenUE Letter to NRC, "Request for Extension of Enforcement Discretion for 10 CFR 50.48(c) (NFPA 805) License Amendment Request," dated September 29, 2008 (ML082820327).
- 6.9 Union Electric Company Letter to the NRC, ULNRC-05797, "Request for Extension of Enforcement Discretion and Commitment to Submittal Date for 10 CFR 50.48(c) License Amendment Request," dated June 28, 2011.
- 6.10 Federal Register Notice 69 FR 33536, dated June 16, 2004.
- 6.11 Federal Register Notice 71 FR 19905, dated April 18, 2006.
- 6.12 Letter, NRC to NEI, "Process for Frequently Asked Questions for Title 10 of the Code of Federal Regulations, Part 50.48(c) Transitions," July 12, 2006 (ML061660105).
- 6.13 NRC Letter from R.S. Boyd to J.K. Bryan, Union Electric Company, dated September 30, 1976.
- 6.14 NRC Letter from O.D. Parr, dated November 3, 1977 to SNUPPS Applicants (Union Electric Company).



- 6.15 NRC Letter from O.D. Parr, dated April 14, 1978 to SNUPPS Applicants (Union Electric Company).
- 6.16 SNUPPS Letter, SLNRC 78-0008, dated May 3, 1978 to NRC.
- 6.17 NRC Letter, "Callaway Plant, Unit 1 - 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 (TAC No. ME0060)," dated December 8, 2008 (ML083380731).
- 6.18 NRC Enforcement Policy Revision 7 dated October 1, 2010 (ML093480037).
- 6.19 NUREG 0830, "Safety Evaluation Report Related to the Operation of Callaway Plant, Unit No. 1," dated October 1981.
- 6.20 NUREG 0830 Supplement 3; "Safety Evaluation Report Related to the Operation of Callaway Plant, Unit No. 1," dated May 1984.
- 6.21 NUREG 0830 Supplement 4; "Safety Evaluation Report Related to the Operation of Callaway Plant, Unit No. 1," dated October 1984.
- 6.22 Union Electric Company Letter to the NRC, ULNRC-00187 CPPR-139 and 140, "Callaway Plant Units 1 & 2 Fire Protection Evaluation," dated April 1, 1977.
- 6.23 Union Electric Company Letter to the NRC, ULNRC-00189 CPPR-139 and 140, "Callaway Plant Units 1 & 2 Fire Protection Evaluation," dated April 15, 1977.
- 6.24 Union Electric Company Letter to the NRC, ULNRC-00254 CPPR-139 and 140, "Callaway Plant Units 1 & 2 Request for Additional Information on Fire Protection," dated May 3, 1978.
- 6.25 Union Electric Company Letter to the NRC, ULNRC-00271 CPPR-139 and 140, "Callaway Plant Units 1 & 2 Request for Additional Information on Fire Protection – Callaway Plant," dated July 5, 1978.
- 6.26 NRC Letter to Mr. John K. Bryan, Vice President Union Electric Company; "Request for Additional Information for the Review of the Callaway Plant, Unit 1," dated May 15, 1981.
- 6.27 SNUPPS letter to the NRC, SLNRC 81-45; "NRC Request for Additional Information – 10 CFR 50, Appendix R," dated June 15, 1981.
- 6.28 Union Electric Company Letter to the NRC, ULNRC-00453, Docket Numbers 50-0483 and 50-486, Callaway Plant, Units 1 & 2, "Final Safety Analysis Report," dated June 17, 1981.
- 6.29 SNUPPS letter to the NRC, SLNRC 81-050; "Revision Four to SNUPPS FSAR," dated June 29, 1981.

- 6.30 SNUPPS letter to the NRC, SLNRC 82-046; "Fire Protection Review," dated November 15, 1982.
- 6.31 SNUPPS letter to the NRC, SLNRC 84-0014, "Fire Protection Review," dated February 1, 1984.
- 6.32 SNUPPS letter to the NRC, SLNRC 84-0016, "Safe Shutdown Following Loss of Instrument Bus," dated February 2, 1984.
- 6.33 SNUPPS letter to the NRC, SLNRC 84-0037, "Fire Protection Review," dated February 24, 1984.
- 6.34 SNUPPS letter to the NRC, SLNRC 84-0041, "Fire Protection Review," dated March 14, 1984.
- 6.35 SNUPPS letter to the NRC, SLNRC 84-0109, "Fire Protection Review," dated August 23, 1984.
- 6.36 Safety Evaluation by the Office of Nuclear Reactor Regulation Supporting Amendment No. 30 to Facility Operating License No. NPF-30, dated January 13, 1988.
- 6.37 Safety Evaluation by the Office of Nuclear Reactor Regulation Related to Amendment No. 169 to Facility Operating License No. NPF-30, dated October 25, 2005.
- 6.38 Procedure APA-ZZ-00312, "Probabilistic Risk Assessment (PRA), Revision 8."
- 6.39 Report R1843-001-003, "Existing Engineering Equivalency Evaluation Review, Revision 1."
- 6.40 Report R1843-001-004, "Licensing Action Review, Revision 0."
- 6.41 Report R1984-001-002, "Verification and Validation of Fire Modeling Tools and Approaches for Use in NFPA 805 and Fire PRA Applications, Revision 1."
- 6.42 CAR 200902315, "Callaway Action Request System, NFPA 805 Transition - Site Organizations Support Tracking CAR."
- 6.43 Calculation 17671-002a, "Callaway NFPA 805 Fire PRA – Component Selection, Revision 1."
- 6.44 Calculation 17671-002b, "MSO Expert Panel Report, Revision 0."
- 6.45 Calculation 17671-003, "Callaway NFPA 805 Fire PRA – Fire PRA Cable Selection/Cable Routing to Support PRA, Revision 0."
- 6.46 Calculation 17671-004, "Fire-Induced Risk Model, Revision 1."

- 6.47 Calculation 17671-005, "Callaway NFPA 805 Fire PRA – Ignition Frequencies, Revision 1."
- 6.48 Calculation 17671-008, "Callaway NFPA 805 Fire PRA – Circuit Failure Analysis, Revision 0."
- 6.49 Calculation 17671-009, "Callaway NFPA 805 Fire PRA – Circuit Failure Likelihood Analysis, Revision 1."
- 6.50 Calculation 17671-010a, "Callaway NFPA 805 Fire PRA - Quantification of Individual Areas, Revision 1."
- 6.51 Calculation 17671-010b, "Callaway NFPA 805 Fire PRA – Main Control Room Fire Analysis, Revision 1."
- 6.52 Calculation 17671-010c, "Callaway NFPA 805 Fire PRA – Component Selection, Revision 1."
- 6.53 Calculation 17671-011, "Callaway NFPA 805 Fire PRA – Post-Fire Human Reliability Analysis, Revision 1."
- 6.54 Calculation 17671-012, "Callaway NFPA 805 Fire PRA – Seismic-Fire Interactions, Revision 1."
- 6.55 Calculation 17671-014, "Callaway NFPA 805 Fire PRA – Uncertainty and Sensitivity Analyses, Revision 1."
- 6.56 "NFPA 805 Task Plan for Fire Risk Evaluations, Revision 1."
- 6.57 Calculation KC-26, "Nuclear Safety Capability Assessment, Revision 0."
- 6.58 Calculation KC-43, "NFPA 805 Code Comparison, Revision 0."
- 6.59 Calculation KC-81, "Fire Safety Analysis for Fire Area A-1, Revision 0."
- 6.60 Calculation KC-82, "Fire Safety Analysis for Fire Area A-2, Revision 0."
- 6.61 Calculation KC-83, "Fire Safety Analysis for Fire Area A-3, Revision 0."
- 6.62 Calculation KC-84, "Fire Safety Analysis for Fire Area A-4, Revision 0."
- 6.63 Calculation KC-85, "Fire Safety Analysis for Fire Area A-5, Revision 0."
- 6.64 Calculation KC-86, "Fire Safety Analysis for Fire Area A-6, Revision 0."
- 6.65 Calculation KC-87, "Fire Safety Analysis for Fire Area A-7, Revision 0."
- 6.66 Calculation KC-88, "Fire Safety Analysis for Fire Area A-8, Revision 0."

- 6.67 Calculation KC-89, "Fire Safety Analysis for Fire Area A-9, Revision 0."
- 6.68 Calculation KC-90, "Fire Safety Analysis for Fire Area A-10, Revision 0."
- 6.69 Calculation KC-91, "Fire Safety Analysis for Fire Area A-11, Revision 0."
- 6.70 Calculation KC-92, "Fire Safety Analysis for Fire Area A-12, Revision 0."
- 6.71 Calculation KC-93, "Fire Safety Analysis for Fire Area A-13, Revision 0."
- 6.72 Calculation KC-94, "Fire Safety Analysis for Fire Area A-14, Revision 0."
- 6.73 Calculation KC-95, "Fire Safety Analysis for Fire Area A-15, Revision 0."
- 6.74 Calculation KC-96, "Fire Safety Analysis for Fire Area A-16, Revision 0."
- 6.75 Calculation KC-97, "Fire Safety Analysis for Fire Area A-17, Revision 0."
- 6.76 Calculation KC-98, "Fire Safety Analysis for Fire Area A-18, Revision 0."
- 6.77 Calculation KC-99, "Fire Safety Analysis for Fire Area A-19, Revision 0."
- 6.78 Calculation KC-100, "Fire Safety Analysis for Fire Area A-20, Revision 0."
- 6.79 Calculation KC-101, "Fire Safety Analysis for Fire Area A-21, Revision 0."
- 6.80 Calculation KC-102, "Fire Safety Analysis for Fire Area A-22, Revision 0."
- 6.81 Calculation KC-103, "Fire Safety Analysis for Fire Area A-23, Revision 0."
- 6.82 Calculation KC-104, "Fire Safety Analysis for Fire Area A-24, Revision 0."
- 6.83 Calculation KC-105, "Fire Safety Analysis for Fire Area A-25, Revision 0."
- 6.84 Calculation KC-106, "Fire Safety Analysis for Fire Area A-26, Revision 0."
- 6.85 Calculation KC-107, "Fire Safety Analysis for Fire Area A-27, Revision 0."
- 6.86 Calculation KC-108, "Fire Safety Analysis for Fire Area A-28, Revision 0."
- 6.87 Calculation KC-109, "Fire Safety Analysis for Fire Area A-29, Revision 0."
- 6.88 Calculation KC-110, "Fire Safety Analysis for Fire Area A-30, Revision 0."
- 6.89 Calculation KC-111, "Fire Safety Analysis for Fire Area A-33, Revision 0."
- 6.90 Calculation KC-112, "Fire Safety Analysis for Fire Area AB-1, Revision 0."

- 6.91 Calculation KC-113, "Fire Safety Analysis for Fire Area C-1, Revision 0."
- 6.92 Calculation KC-114, "Fire Safety Analysis for Fire Area C-2, Revision 0."
- 6.93 Calculation KC-115, "Fire Safety Analysis for Fire Area C-3, Revision 0."
- 6.94 Calculation KC-116, "Fire Safety Analysis for Fire Area C-5, Revision 0."
- 6.95 Calculation KC-117, "Fire Safety Analysis for Fire Area C-6, Revision 0."
- 6.96 Calculation KC-118, "Fire Safety Analysis for Fire Area C-7, Revision 0."
- 6.97 Calculation KC-119, "Fire Safety Analysis for Fire Area C-8, Revision 0."
- 6.98 Calculation KC-120, "Fire Safety Analysis for Fire Area C-9, Revision 0."
- 6.99 Calculation KC-121, "Fire Safety Analysis for Fire Area C-10, Revision 0."
- 6.100 Calculation KC-122, "Fire Safety Analysis for Fire Area C-11, Revision 0."
- 6.101 Calculation KC-123, "Fire Safety Analysis for Fire Area C-12, Revision 0."
- 6.102 Calculation KC-124, "Fire Safety Analysis for Fire Area C-13, Revision 0."
- 6.103 Calculation KC-125, "Fire Safety Analysis for Fire Area C-14, Revision 0."
- 6.104 Calculation KC-126, "Fire Safety Analysis for Fire Area C-15, Revision 0."
- 6.105 Calculation KC-127, "Fire Safety Analysis for Fire Area C-16, Revision 0."
- 6.106 Calculation KC-128, "Fire Safety Analysis for Fire Area C-17, Revision 0."
- 6.107 Calculation KC-129, "Fire Safety Analysis for Fire Area C-18, Revision 0."
- 6.108 Calculation KC-130, "Fire Safety Analysis for Fire Area C-19, Revision 0."
- 6.109 Calculation KC-131, "Fire Safety Analysis for Fire Area C-20, Revision 0."
- 6.110 Calculation KC-132, "Fire Safety Analysis for Fire Area C-21, Revision 0."
- 6.111 Calculation KC-133, "Fire Safety Analysis for Fire Area C-22, Revision 0."
- 6.112 Calculation KC-134, "Fire Safety Analysis for Fire Area C-23, Revision 0."
- 6.113 Calculation KC-135, "Fire Safety Analysis for Fire Area C-24, Revision 0."
- 6.114 Calculation KC-136, "Fire Safety Analysis for Fire Area C-25, Revision 0."

- 6.115 Calculation KC-137, "Fire Safety Analysis for Fire Area C-26, Revision 0."
- 6.116 Calculation KC-138, "Fire Safety Analysis for Fire Area C-27, Revision 0."
- 6.117 Calculation KC-139, "Fire Safety Analysis for Fire Area C-28, Revision 0."
- 6.118 Calculation KC-140, "Fire Safety Analysis for Fire Area C-29, Revision 0."
- 6.119 Calculation KC-141, "Fire Safety Analysis for Fire Area C-30, Revision 0."
- 6.120 Calculation KC-142, "Fire Safety Analysis for Fire Area C-31, Revision 0."
- 6.121 Calculation KC-143, "Fire Safety Analysis for Fire Area C-32, Revision 0."
- 6.122 Calculation KC-144, "Fire Safety Analysis for Fire Area C-33, Revision 0."
- 6.123 Calculation KC-145, "Fire Safety Analysis for Fire Area C-34, Revision 0."
- 6.124 Calculation KC-146, "Fire Safety Analysis for Fire Area C-35, Revision 0."
- 6.125 Calculation KC-147, "Fire Safety Analysis for Fire Area C-36, Revision 0."
- 6.126 Calculation KC-148, "Fire Safety Analysis for Fire Area C-37, Revision 0."
- 6.127 Calculation KC-149, "Fire Safety Analysis for Fire Area D-1, Revision 0."
- 6.128 Calculation KC-150, "Fire Safety Analysis for Fire Area D-2, Revision 0."
- 6.129 Calculation KC-151, "Fire Safety Analysis for Fire Area RFB-1, Revision 0."
- 6.130 Calculation KC-152, "Fire Safety Analysis for Fire Area LDF-1, Revision 0."
- 6.131 Calculation KC-153, "Fire Safety Analysis for Fire Area RB-1, Revision 0."
- 6.132 Calculation KC-154, "Fire Safety Analysis for Fire Area RSB-1, Revision 0."
- 6.133 Calculation KC-155, "Fire Safety Analysis for Fire Area RW-1, Revision 0."
- 6.134 Calculation KC-156, "Fire Safety Analysis for Fire Area TB-1, Revision 0."
- 6.135 Calculation KC-157, "Fire Safety Analysis for Fire Area UNCT, Revision 0."
- 6.136 Calculation KC-158, "Fire Safety Analysis for Fire Area UNPH, Revision 0."
- 6.137 Calculation KC-159, "Fire Safety Analysis for Fire Area USCT, Revision 0."
- 6.138 Calculation KC-160, "Fire Safety Analysis for Fire Area USPH, Revision 0."

- 6.139 Calculation KC-161, "Fire Safety Analysis for Fire Area YD-1, Revision 0."
- 6.140 RFR 200906322, "Evaluation of the Hatch Cover Configurations and a Cable Tray Fire Stop Configuration where Thermolag was Removed," February 8, 2010.
- 6.141 RFR 200906325, "Auxiliary/Turbine Building Wall Barrier Evaluation which Separates Fire Area A-23 and Fire Area T-2 with Non Rated Configurations," February 8, 2010.
- 6.142 RFR 200906327, "Evaluate Fire Resistance Capability of the TDAFP Room Blowout Panel," March 25, 2011.
- 6.143 RFR 201000504, "Cable Trench in Control Room Floor," February 8, 2010.
- 6.144 RFR 201000502, "Fire Detector Spacing Requirements," February 8, 2010.
- 6.145 RFR 19347A, "Locking and Inspection of Fire Doors," August 2, 1999.
- 6.146 RFR 200906321, "Fire Protection Penetration 0P14151028, Non-Rated Checker Plate Cover Configuration," February 8, 2010.
- 6.147 RFR 201009031, "Evaluate Structural Steel Thermal Shorts from Wolf Creek OE," September 21, 2010.
- 6.148 RFR 2011030139, "Evaluate RB-1 Possible Intervening Combustibles for NSCA," TBD.
- 6.149 RFR 200906330, "Fire Doors Issues Resolution," February 8, 2010.
- 6.150 RFR 201007840, "Fire Extinguisher Code Deviation Evaluation," February 3, 2011.
- 6.151 RFR 20696A, "Evaluate Fire Barrier Pen Seal Test of FB-3 Seal," June 12, 2000.
- 6.152 RFR 200503420, "Structural Steel Fireproofing Minimum Thickness," March 16, 2005.
- 6.153 RFR 17928A, "Evaluate Structural Steel for 3-Hr Fire Barrier," March 18, 1997.
- 6.154 RFR 17935A, "Evaluate Fire Barrier Penetrations in 8" Slab," March 20, 1997.
- 6.155 RFR 3510C, "Pre-Action Sprinkler System Document Update," June 1, 2001.



## **ATTACHMENTS**