Duke Energy Carolinas, LLC
Oconee Nuclear Site, Units 1, 2, and 3
License Amendment Request to Adopt NFPA-805, "Performance-Based Standard for Fire Protection for Light Water Reactor Generating Plants"

ENCLOSURE 2 – TRANSITION REPORT

ATTACHMENT C

NEI 04-02 Table B-3 – Fire Area Transition

Has been redacted and withheld as security-related information under 10 CFR 2.390

D. NEI 04-02 Table F-1 Non-Power Operational Modes Transition

The results of the Non-Power Operational Modes Transition will be included with the supplement to the LAR.

E. NEI 04-02 Table G-1 Radioactive Release Transition

3 Pages Attached

Attachment E – NEI 04-02 Table G-1 Radioactive Release Transition

Table G-1 - Radioactive Release Transition Report

NFPA 805 Section 1.5.2 Radioactive Release Performance Criteria

Radiation release to any unrestricted area due to the direct effects of fire suppression activities (but not involving fuel damage) shall be as low as reasonably achievable and shall not exceed applicable 10 CFR, Part 20, Limits.

Implementing Guidance Appendix G Step 1

Review pre-fire plans.
Ensure for locations that have the potential for contamination that specific steps are included for containment and monitoring of potentially contaminated fire suppression water. Update pre-fire plans as necessary.

Review

A comprehensive review of the ONS fire pre-plans, including applicable outbuildings was conducted. Areas known to contain a RCA/RCZ are identified in the "Special Hazards" Section of the specific fire plan zone. The Pre fire plans also address smoke management in the "Ventilation Equipment section of each pre fire plan. This section discusses / informs the fire brigade leader and or control room of existing or possible supply air pathways as well as exhaust air pathways and ventilation pathways via HVAC units as well as fire dampers. These units can be shut down for smoke management during a contaminated fire event. Also identified are ingress and egress points for smoke mitigation. General building ventilation is monitored by RIA's. Fire Brigade Standard Operating Guideline 16 "Fires within a RCA/RCZ" was developed to address radiological release concerns.

Floor drains in radiological areas are routed to contaminated hold-up tanks, then processed prior to release. Yard drains and other drains are routed to Chemical Treatment Pond #3 and monitored for radioactive liquid releases before the water leaves site. ONS has prior NRC approval for the concentration of radioactive material in releases of liquid effluents at anytime from the site boundary to unrestricted areas [denoted in Figure 2.1-4(a) of the ONS UFSAR] that shall be limited to 10 times the effluent concentrations specified in 10 CFR20.

Standard Operating Guideline for "Fires within a RCA/RCZ" has been created to address smoke management as well as potentially contaminated run off when fires involve potentially contaminated areas that may not be identified in the fire plan. These areas may include other RCZ 's that may be established for short term periods such as maintenance.

Unit Applicability 1, 2, and 3

Comments Pre-fire plans for zones 1-47 were screened from review due to being outside the RCA. Pre-fire plans for outbuildings which may be used for storage of radioactive materials and which may house a RCA were included in the review. Outbuildings included were 8027, 8055, 8087, 8089, 8091, 8093, and 8096.

Reference Document	Document Detail
SLC 16.11.1, Radiological Effluents Control, 7/12/2001	
SOG 8, Oconee Nuclear Station, Fire Brigade Operations, Standard Operating Guideline Number 8, Hazardous Materials Response, 2/27/1997	
SOG 9, Oconee Nuclear Station, Fire Brigade Operations, Standard Operating Guideline Number 9, Hose Selection and Use, 11/16/1998	
SOG 10, Oconee Nuclear Station, Fire Brigade Operations, Standard Operating Guideline Number 10, Fire Brigade Equipment Locations, 4/24/2003	
SOG 11, Oconee Nuclear Station, Fire Brigade Operations, Standard Operating Guideline Number 11, Hydrogen Bulk Storage, 10/2/2007	
SOG 12, Oconee Nuclear Station, Fire Brigade Operations, Standard Operating Guideline Number 12, Purging Electric Generator, 12/20/2001	
SOG 13, Oconee Nuclear Station, Fire Brigade Operations, Standard Operating Guideline Number 13, Sprinkler Cross Reference, 9/19/2007	
SOG 14, Oconee Nuclear Station, Fire Brigade Operations, Standard Operating Guideline Number 14, Firefighting Foam Carts, 9/18/2007	
SOG 15, Oconee Nuclear Station, Fire Brigade Operations, Standard Operating Guideline Number 15, Fire Response to CO2 Dump, 10/2/2007	

Table G-1 - Radioactive Release Transition Report

NFPA 805 Section 1.5.2 Radioactive Release Performance Criteria

SOG 16, Oconee Nuclear Station, Fire Brigade Operations, Standard Operating Guideline Number 16, Fires Within a RCA/RCZ, 1/23/2008

SOG 6, Oconee Nuclear Station, Fire Brigade Operations, Standard Operating Guideline Number 6, Restoring Equipment, 2/27/1997

SOG 5, Oconee Nuclear Station, Fire Brigade Operations, Standard Operating Guideline Number 5., Fires Involving Main Transformers, 2/27/1997

SOG 4, Oconee Nuclear Station, Fire Brigade Operations, Standard Operating Guideline Number 4, Fire Brigade Leadership Guidelines, 2/27/1997

SOG 3, Oconee Nuclear Station, Fire Brigade Operations, Standard Operating Guideline Number 3, Electrical Fires, 2/27/1997

SOG 2, Oconee Nuclear Station, Fire Brigade Operations, Standard Operating Guideline Number 2, Staffing Guidelines, 10/25/2005

SOG 1, Oconee Nuclear Station, Fire Brigade Operations, Standard Operating Guideline Number 1, General Response Guidelines, 2/27/1997

SLC 16.11.2, Radiological Effluents Control, 1/31/2000

FAQ 06-0025, Define Minimum Acceptable Pre-Plan Scope, 7/19/2007

Oconee Nuclear Site Fire Plan

Table G-1 - Radioactive Release Transition Report

NFPA 805 Section 1.5.2 Radioactive Release Performance Criteria

Radiation release to any unrestricted area due to the direct effects of fire suppression activities (but not involving fuel damage) shall be as low as reasonably achievable and shall not exceed applicable 10 CFR, Part 20, Limits.

Implementing Guidance Appendix G Step 2

Review fire brigade training materials.
Ensure that training materials deal specifically with the containment and monitoring of potentially contaminated fire suppression water.
Update training materials as necessary.

Review

Training on radiological release potential is provided in one lesson plan. The Hazardous Materials lesson plan discusses radioactive materials and need for containment of run off and use of ALARA principles. Other topical lesson plans do not address radiological release boundary control or monitoring. Creation of SOG-16 for fires within a RCA/RCZ requires inclusion into this training.

Unit Applicability 1, 2, and 3

Comments Control and monitoring of potential radiological releases consistent with SOG-16 needs to be incorporated into the initial fire brigade training and continuing curriculum.

Reference Document	Document Detail
SOG 16, Oconee Nuclear Station, Fire Brigade Operations, Standard Operating Guideline Number 16, Fires Within a RCA/RCZ, 1/23/2008	
FAQ 06-0025, Define Minimum Acceptable Pre-Plan Scope, 7/19/2007	
NGD-FP-01, FIRE BRIGADE ORIENTATION, Rev. 3	
NGD-FP-02, FIRE BEHAVIOR AND METHODS OF EXTINGUISHMENT , Rev. 2	
NGD-FP-05, FIRE HOSE, NOZZLES, APPLIANCES, AND STREAMS, Rev. 4	
SAF-FP-03, PORTABLE FIRE EXTINGUISHERS, Rev. 3	
NGD-FB-04, FIRE FIGHTING PERSONAL PROTECTIVE EQUIPMENT (PPE), Rev. 4	
NGD-FP-06 , FIRE SUPPRESSION AND DETECTION SYSTEMS, Rev. 4	
NGD-FP-07, SELF CONTAINED BREATHING APPARATUS (SCBA), Rev. 1	
NGD-FP-08, INCIDENT COMMAND SYSTEM AND FIRE FIGHTER SAFETY, Rev. 4	
NGD-FP-09, FIRE AREA SEARCH AND RESCUE, Rev. 3	
NGD-FP-10, VENTILATION AND DAMAGE CONTROL, Rev. 4	
NGD-FP-11, INTRODUCTION TO HAZARDOUS MATERIALS, Rev. 2	
ONS-FBL, FIRE BRIGADE LEADER TRAINING, Rev. 0	

F. Fire-Induced Multiple Spurious Operations Resolution

4 Pages Attached

Introduction

As part of the NFPA 805 transition project, a comprehensive review and evaluation of ONS susceptibility to fire-induced MSOs is being performed. The process will be conducted in accordance with NEI 04-02 Revision 1 and RG 1.205 Revision 0, as supplement by FAQ 07-0038 Revision 1 (Draft). Duke requests NRC approval of the following process.

Background

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.

Methodology

The NRC has reviewed Revision 1 of NEI 00-01 and concluded that Chapter 3 provides an acceptable deterministic approach for analysis of post-fire safe shutdown circuits when applied in accordance with the regulatory expectations described in RIS 2005-30 and when used in conjunction with NFPA 805 and RG 1.205 for a plant that has transitioned to a 10 CFR 50.48(c) LB (Reference: RIS 2005-30 and RG 1.205 Revision 0). In addition, an acceptable Fire PRA as defined in RG 1.205 Regulatory Position C.4.3 includes methods for the selection of cables and detailed circuit failure modes analysis, as well as the integration of these circuit failures into the overall Fire PRA (e.g., NUREG/CR-6850 Tasks 3, 9, 10, and 14).

The approach outlined in Figure F-1 is one acceptable method to address fire-induced MSOs. This method uses insights from a Fire PRA that meets the requirements of RG 1.205, Revision 0.

This process is intended to be in support of transition to a new LB. Post-transition changes would use the RI-PB change process. The post-transition change process for the assessment of a specific MSO would 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 and/or inspection process).

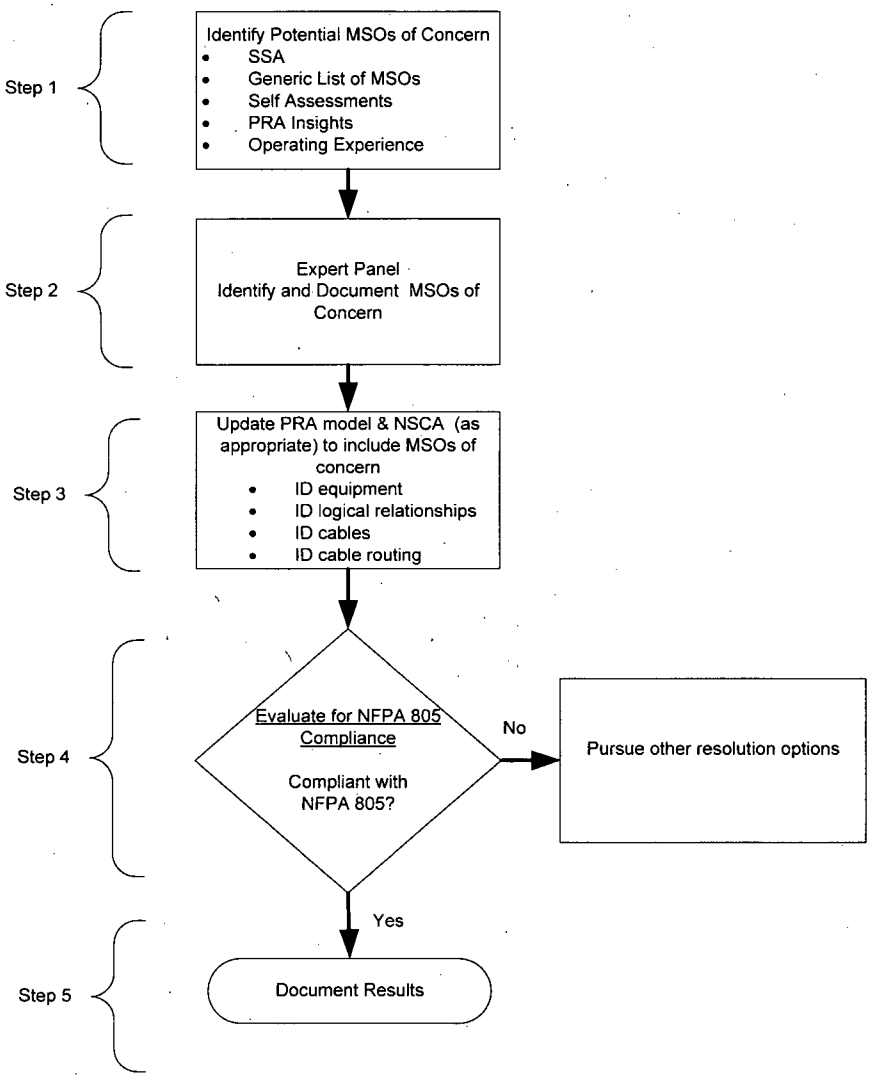

Figure F-1 – Multiple Spurious Operations – Transition Resolution Process

Step 1 Identify potential MSOs of concern

Information sources that may be used as input include:

- Post-fire safe shutdown analysis (NEI 00-01, Revision 1, Chapter 3)
- Generic lists of MSOs (e.g., from Owners Groups, if available.)
- Self assessment results (e.g., NEI 04-06 assessments performed to addressed RIS 2004-03)
- PRA insights (e.g., NEI 00-01 Revision 1, Appendix F)
- Operating Experience (e.g., licensee event reports, NRC Inspection Findings, etc.)

Step 2 Conduct an expert panel to assess plant specific vulnerabilities (e.g., per NEI 00-01, Rev. 1 Section F.4.2).

The expert panel should focus on system and equipment interactions that could impact nuclear safety. This information will be used in later tasks to identify cables and potential locations where vulnerabilities could exist.

[Note: The physical location of the cables of concern (e.g., fire zone/area routing of the identified MSO cables), if known, may be used at this step in the process to focus the scope of the detailed review in further steps.]

Step 3 – Update the Fire PRA model and NSCA to include the MSOs of concern.

This includes the:

- Identification of equipment (NUREG/CR-6850 Task 2)
- Identification of cables that, if damaged by fire, could result in the spurious operation (NUREG/CR-6850 Task 3, Task 9)
- Identify routing of the cables identified above.

Include the equipment/cables of concern in the Nuclear Safety Capability Assessment (NSCA). Including the equipment and cable information in the NSCA does not necessarily imply that the interaction is possible since separation/protection may exist throughout the plant fire areas such that the interaction is not possible).

Note: Instances may exist where update of the MSOs may not warrant update of the Fire PRA and NSCA analysis. For example, Fire PRA analysis in NUREG/CR-6850 Task 2, Component Selection, may determine that the particular interaction may not lead to core damage, or pre-existing equipment and cable routing information may determine that the particular MSO interaction is not physically possible. The rationale for exclusion of identified MSOs from the Fire PRA and NSCA should be documented and the configuration control mechanisms should be reviewed to provide reasonable confidence that the exclusion basis will remain valid.

Step 4 – Evaluate for NFPA 805 Compliance

MSOs of concern should be included in the compliance assessment in the NSCA, consistent with the process for all NSCA equipment. The compliance assessment may use both deterministic and performance-based approaches.

The performance-based approach may include the use of feasible and reliable recovery actions. During transition, if the recovery actions are deemed unallowed per the pre-transition LB (Bin H for FAQ 06-0012), a RI-PB Change Evaluation may be used as potential means of demonstrating NFPA 805 compliance.

Note that during the NFPA 805 transition, deterministic separation/protection is per the CLB (10 CFR 50, Appendix R/NUREG-0800) with consideration of approved exemptions, etc. MSOs that meet the separation/protection requirements of the pre-transition LB should be documented and the appropriate transition documentation updated as necessary.

MSOs that are not in compliance with NFPA 805 will be reviewed for other resolution options, such as plant modifications.

Step 5 - Document Results

The results of the process should be documented in the appropriate documents.

Completion of these tasks is scheduled to be submitted to the NRC in the supplement to the LAR.

G. Operator Manual Actions Transition

1 Page Attached

Background

Operator manual actions and repairs will be transitioned as "recovery actions" in the new NFPA 805 LB. Operator manual actions will be evaluated in accordance with NEI 04-02, Revision 1, for feasibility. Additional considerations from FAQ 06-0012 (ML072340368) and FAQ 06-0011 (ML080300121) will also be included in the treatment of operator manual actions. FAQ 07-0030 was discussed in concept with the NRC during pilot meetings held on December 12, 2007 and April 15-16, 2008.

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

Results

All of the reviews and analysis necessary to support transition have not been completed. Specifically, the Fire PRA for ONS Units 1, 2, and 3 to support the RI-PB Change Evaluations per Regulatory Positions C.2.2 and C.4.3 of RG 1.205 has not been completed. Therefore, Fire PRA results, the associated Change Evaluations, and the determination of the additional risk presented by the use of recovery actions as a compliance strategy have not been completed. Completion of these tasks is scheduled to be submitted to the NRC in the supplement to the LAR.

H. NEI 04-02 Frequently Asked Question Summary Table

6 Pages Attached

Note: The NEI 04-02 FAQ process will continue through the transition of non-pilot NFPA 805 transition plants. Final closure of the FAQs will occur when RG 1.205, which endorses the new revision of NEI 04-02, is approved by the NRC. It is expected that additional FAQs will be written and existing FAQs will be revised as the Pilot Plant process continues.

Table H-1 - NEI 04-02 FAQs – Status and Reference Table

No.	Rev.	Title	FAQ Ref.	FAQ NRC Comment Ref.	Technical Agreement	Closure Memo	FAQ Cross Ref.
06-0001		Alternate method for Engineering Evaluations	ML061440419	ML062060303	WITHDRAWN 12/14/06 ML063480169	WITHDRAWN 12/14/06 ML063480169	N/A
06-0002	2	NEI 04-02 Section 5.3.3 and App. I, Order of Questions for Change Analysis Screening	ML061440420 ML063170357 ML063350515	ML062060303	01/04/07 ML070030276	01/04/07 ML070030276	Note 1 4.5
06-0003	1b	Change Analysis Screening	ML061440422 ML063170355	ML062060303	01/04/07 ML070030242	01/04/07 ML070030242	Note 1 4.5
06-0004	0	Clarify NFPA 805 Chapter 4 and 3 relationship for 'required' FP systems/features	ML061440430	ML062060303 ML063350442			4.1 4.2 4.8.1
06-0005	2	Guidance on FPP-related changes	ML062350095 ML063180544 ML072820015	ML072400021 ML073060462			4.5
06-0006	2	High-low pressure interface definition and NEI 00-01/NFPA 805 discrepancies	ML062350109 ML063170360 ML063540308	ML062890268 ML070660071	03/12/07 ML070030117	03/12/07 ML070030117	Note 1 4.2
06-0007	3	NFPA 805 Chapter 3 Requirements for Fire Brigades	ML062350121 ML070030325 ML070510442 ML071550408	ML063170365 ML071380338	6/21/07 ML071940375	11/13/07 ML072560733	Note 1 4.1

Table H-1 - NEI 04-02 FAQs – Status and Reference Table

No.	Rev.	Title	FAQ Ref.	FAQ NRC Comment Ref.	Technical Agreement	Closure Memo	FAQ Cross Ref.
06-0008	8	Alternate method for Engineering Evaluations	ML062860250 ML070510499 ML070800007 ML071020160 ML071020169 ML071080099 ML071340180 ML072820016 ML073370025	ML063350442 ML070640544 ML071380177 ML071380182 ML072050214 ML072740231 ML073370775	11/24/08 ML080430163		5.1 Att. M Att. P
06-0011	2	Clarify III.G.3 Compliance Transition	ML062890271 ML070510505 ML072740248	ML063350442 ML072400023	10/18/07 ML073200763	3/04/08 ML080300121	Note 1 4.2
06-0012	5	Clarify Manual Action Transition in Appendix B	ML062860255 ML063170362 ML070850610 ML071380229 ML071570260 ML073320028	ML063350442 ML071380186 ML072820170 ML072820168	6/21/07 ML071940375 11/29/07 ML073400502	1/24/08 ML072340368	Note 1 4.2 Att. B Att. C Att. G
06-0016	1	Ignition Source counting guidance for Electrical Cabinets	ML070030348 ML071020174	ML070640555	5/17/07 ML071510425	10/05/07 ML072700475	Note 1 Note 2 Note 3
06-0017	2	Ignition Source counting guidance for High Energy Arcing Faults (HEAF)	ML070030383 ML071350432 ML071570255	ML071730038	6/21/07 ML071940375	9/26/07 ML072500300	Note 1 Note 2 Note 3
06-0018	1	Ignition Source counting guidance for Main Control Board (MCB)	ML070030427 ML071020181	ML070640562	5/17/07 ML071510425	9/7/07 ML072500273	Note 1 Note 2 Note 3

Table H-1 - NEI 04-02 FAQs – Status and Reference Table

No.	Rev.	Title	FAQ Ref.	FAQ NRC Comment Ref.	Technical Agreement	Closure Memo	FAQ Cross Ref.
06-0019	4	Define "power block" and "plant"	ML070030437 ML071340184 ML072550063 ML072740255 ML073060545	ML070510365 ML073060471	11/15/07 ML073200936	3/05/08 ML080510224	Note 1 4.1.3 Att. I
06-0020	1	Definition of "applicable"	ML070030443 ML071340188	ML070510369	5/17/07 ML071510425	11/28/07 ML072420286	Note 1 4.1 Att. A
06-0021	1a	Clarify that air drops are acceptable.	ML070030457 ML071340192	ML070510417	5/17/07 ML071510425	11/13/07 ML072420306	Note 1 4.1 Att. A
06-0022	2	Identify a list of typical flame propagation tests which are considered acceptable.	ML070030459 ML072340055	ML072050222 ML072740236			4.1 Att. A
06-0023		Grant exception for Diesel Generator Day Tanks located within Diesel Generator Buildings.	ML070030470		WITHDRAWN 5/17/07 ML071510425	10/3/07 ML072700552	N/A
06-0024	1	Define what "adequate clearance" is.	ML070030472 ML072340062	ML071380189	8/23/07 ML072550213	10/16/07 ML072740225	Note 1 4.1 Att. A
06-0025	5	Define minimum acceptable pre-plan scope.	ML070030476 ML071340194 ML073400147 ML073510082 ML073550021	ML070300588 ML073510074	7/19/07 ML072080246 (withdrawn)		4.1 Att. A

Table H-1 - NEI 04-02 FAQs – Status and Reference Table

No.	Rev.	Title	FAQ Ref.	FAQ NRC Comment Ref.	Technical Agreement	Closure Memo	FAQ Cross Ref.
06-0026		Clarify NFPA code requirements for gear maintenance	ML070030480	ML071380194	WITHDRAWN 5/17/07 ML071510425	WITHDRAWN 10/15/07 ML072560564	N/A
06-0027	0	Clarify the "where provided" statement.	ML071380236		10/18/07 ML073200763		4.1 Att. A
06-0028	2	Clarify intent of "familiarization with plant fire prevention procedures, fire reporting, and plant emergency alarms" regarding scope of or depth of the training.	ML070030489 ML071340195 ML071550415	ML070510427 ML071380349	6/21/07 ML071940375	10/17/07 ML072740233	Note 1 4.1 Att. A
07-0031	0	Misc Binning Issues	ML071380238	ML072880327 ML073060480	11/29/07 ML073400502	12/17/07 ML072840658	Note 1 Note 2 Note 3
07-0032	1	10 CFR 50.48(a) and GDC 3 clarification	ML071930378 ML080700411 ML081300697	ML073060492 ML081300689			5.1
07-0033	1	Review of Existing Engineering Equivalency Evaluations	ML071930379 ML073550023	ML072700037	2/21/08 ML080730007		4.2.2.2 Att. J
07-0035	0	Bus Duct counting guidance for High Energy Arcing Faults	ML071650151	ML073540262			Note 2 Note 3
07-0036	1	Define compliance categories for Table B-1	ML072320155 ML073550025	ML072700038	2/21/08 ML080730007		4.1 Att. A
07-0038	0	Lessons learned for MSOs	ML072740262	ML073060506			4.8.2.1 Att. F

Table H-1 - NEI 04-02 FAQs – Status and Reference Table

No.	Rev.	Title	FAQ Ref.	FAQ NRC Comment Ref.	Technical Agreement	Closure Memo	FAQ Cross Ref.
07-0039	1	Provide update of NEI 04-02 B-2 and B-3 Processes	ML072740268 ML080910136	ML073330556			4.2 Att. B Att. C
07-0040	2	Clarification on Non-Power Operations	ML073060550 ML080720027 ML081430041	ML073170227 ML081150739			4.3 Att. D
07-0041	0	Chapter 3 Codes and Standards	ML073310447		CANCELLED	CANCELLED	N/A
07-0042	0	Vented Cabinets	ML080230438				Note 2
08-0047	0	Spurious Operation Probability	ML081200126				Note 2

Note 1 – These FAQs are closed by the issuance of an NRC closure memo.

Note 2 – These FAQs are associated with Fire PRA development, which is summarized in Section 4.5.1. The FAQs are not specifically discussed in the TR.

Note 3 – These FAQs are associated with counting ignition sources and are not specifically discussed in the TR.

I. Definition of Power Block

1 Page Attached

For the purposes of establishing the structures included in the ONS fire protection program in accordance with 10 CFR 50.48(c) and NFPA 805, plant structures listed in the following table are considered to be part of the power block.

Table I-1 – ONS Power Block Definition

Power Block Structures	Fire Area(s)
Auxiliary Building	BOP, WP1,2, & 3
Reactor Building	RB1,2, & 3
Turbine Building	BOP
Blockhouse 1 & 2	BH12
Blockhouse 3	BH3
Standby Shutdown Facility	SSF
CT-4	CT-4
Cable Trench T-100	T-100
Elevated Water Storage Tank	YARD
Transformer CT5 and Cable Trench	YARD
Radwaste Facility	YARD
Interim Radwaste Facility	YARD
Essential Siphon Vacuum Building	YARD
CCW Intake Structure	YARD
CCW Intake Weir Wall	YARD
Intake Skimmer Wall	YARD
Transformer Yard (1T, 2T, 3T, 3X, 3Y, 3Z, 3S, T1, T2, CT-1, CT-2, CT-3)	YARD
Service Building (Waste Treatment Room)	YARD
230 kV Switchyard	SWITCHYARD
525 kV Switchyard	SWITCHYARD
CCW Discharge Structure	YARD
Hydrogen Shed	YARD
Nitrogen Shed	YARD
Auxiliary Fuel Oil Tanks	YARD
Keowee Dam	YARD
Keowee Intake Structure (Power Tunnel & Penstock)	YARD
Keowee Power House	KEOWEE
Keowee Main Step Up Transformer	KEOWEE
Keowee Underground Trench/Cables	YARD

The Lee Steam Station and Central Switchyard are excluded from the definition of power block.

J. EEEE Transition

5 Pages Attached

Engineering Evaluation ID	Doc. Detail	Include in LAR/TR
OSC-5613, Units 1&2 Block House Wall Interim Fire Barrier Qualification, Rev. 0, 11/23/1993		Yes

Summary

The purpose of the evaluation was to qualify the wall separating the Turbine Building and the Blockhouse as a 3-hr. fire barrier. The evaluation determined the wall separating the Unit 1 & 2 Blockhouse from the Turbine Building is adequate to function as a 3-hour rated barrier. This is based on the following:

- The material and type of construction of the wall,
- The 3-hour rated door assembly,
- Properly sealed through penetrations,
- Adequate separation between the source and target combustibles to preclude fire propagation from the two exhaust fan openings.

Evaluation

Evaluation is deemed adequate for transition.

The technical content of the evaluation has determined that:

- The temperature on the unexposed side of the barrier may not be below the ignition temperature of the penetrating items during a fire. The barrier is acceptable due to the features identified and combustibles on the unexposed side of the barrier are not in close enough proximity to the barrier to propagate a fire.
- The continuity and thickness of the fire barrier material is adequate.
- The nature of the penetration assemblies is equivalent or has the fire resistance equivalency to the tested configuration.

As verified by field walkdown and technical review, the bases for acceptability remain valid. The technical review was performed as part of the development of OSC-5613 dated 11/29/1993.

NFPA 805 Ch. 3 Ref.

3.11.2 Fire Barriers.

3.11.3 Fire Barrier Penetrations.

3.11.4 Through Penetration Fire Stops.

Unit	Fire Area Name	Description
1 2 3	BH12	Unit 1 & 2 Block House
1 2 3	BOP	Balance of Plant

Fire Zone Name	Description
33	Unit 2 6900/4160 Volt Switchgear
34	Unit 1 6900/4160 Volt Switchgear
45	Unit 1 & 2 Block House

Engineering Evaluation ID	Doc. Detail	Include in LAR/TR
OSC-7350, Att. 39, ONS Penetration Seal Database and 86-10 Evaluations, Rev. 6, 11/30/2004	Att. 39, Rev. 02	Yes

Summary

The purpose of this calculation is to evaluate the fire resistance qualification of the 3-hour fire rated wall with the ½ inch open conduit between CT4 and the Unit 1,2 Blockhouse. The calculation determined the wall retains its 3-hour fire resistance rating with the embedded ½ inch open conduit installed and a fire would not propagate across the wall due to the open conduit. This is based on:

- Material and type of barrier construction
- Combustible controls
- Area detection and suppression
- No combustibles within vicinity of open conduit
- Fire Brigade response.

Evaluation

Evaluation is deemed adequate for transition.

The technical content of the evaluation has determined that:

- The temperature on the unexposed side of the barrier is sufficiently below the ignition temperature of the penetrating items during a fire
- The continuity and thickness of the fire barrier material is adequate.
- The fire wall and penetration assemblies have an acceptable fire resistance equivalency.

As verified by field walkdown and technical review, the bases for acceptability remain valid. The technical review was performed as part of the development of Attachment 39 dated 9/06/2002.

NFPA 805 Ch. 3 Ref.

3.11.2 Fire Barriers.

3.11.4 Through Penetration Fire Stops.

Unit	Fire Area Name	Description
1 2 3	BH12	Unit 1 & 2 Block House
1 2 3	CT4	CT-4 Block House

Fire Zone Name	Description
45	Unit 1 & 2 Block House
46	CT-4 Block House

Engineering Evaluation ID	Doc. Detail	Include in LAR/TR
OSC-9296, Fire Protection Evaluation for Unit 3 Block House Wall, Rev. 0, 5/5/2008		Yes

Summary

The purpose of this engineering evaluation is to qualify the fire barrier separating the Unit 3 Blockhouse and the Turbine Building by determining if a fire could propagate from the Turbine Building to the Blockhouse. The evaluation determined that a fire in the cable trays in the Turbine Building would not affect or propagate to the Unit 3 Blockhouse due to the wall construction and the separation of the source and target combustibles, and the wall separating the Turbine Building and the Unit 3 Blockhouse is adequate to function as a fire barrier separating the two Fire Areas.

Evaluation

Evaluation is deemed adequate for transition.

The technical content of the evaluation has determined that:

- The temperature on the unexposed side of the barrier is sufficiently below the ignition temperature of the penetrating items during a fire
- The continuity and thickness of the fire barrier material is adequate.
- The construction of the fire wall and penetration seals have acceptable fire resistance.

As verified by field walkdown and a technical review, the bases for acceptability remain valid.

NFPA 805 Ch. 3 Ref.

3.11.2 Fire Barriers.

3.11.3 Fire Barrier Penetrations.

Unit	Fire Area Name	Description
1 2 3	BH3	Unit 3 Block House
1 2 3	BOP	Balance of Plant

Fire Zone Name	Description
29	Unit 3 4160 Volt Switchgear
30	Unit 2 MSRH B1 & B2
47	Unit 3 Block House

Engineering Evaluation ID	Doc. Detail	Include in LAR/TR
OSC-9297, Fire Protection Evaluation for West Penetration Pipe Tunnel Area to Auxiliary Building, Rev. 0, 5/5/2008		Yes

Summary

An evaluation was performed to verify that a fire in the Spent Fuel Cooler Rooms or adjacent fire zones (Balance of Plant Fire Area) will not feasibly propagate to the Cask Decon Tank Rooms (West Penetration Fire Area) resulting in damage to SSF cables. The evaluation concluded that a fire in the Auxilliary Building fire zones adjacent to the pipe tunnel area will not credibly propagate through the pipe tunnel resulting in damage to the SSF cables in the Cask Decon Tank Room. This conclusion is based on:

- The lack of combustible continuity/fire propagation to the SSF cables,
- Limited potential for a challenging fire in the Spent Fuel Cooler Rooms that would result in hot gas migration to the Cask Decon Tank Room,
- Automatic smoke detection in the Cask Decon Tank Rooms, and
- Manual fire suppression capabilities (plant fire brigade, fire extinguishers, and hose stations).

Evaluation

Evaluation is deemed adequate for transition.

The technical content of the evaluation has determined that:

- The temperature on the unexposed side of the barrier is below the ignition temperature of the penetrating items.

As verified by field walkdown and technical review, the bases for acceptability remain valid.

NFPA 805 Ch. 3 Ref.

3.11.3 Fire Barrier Penetrations.

Unit	Fire Area Name	Description
1 2 3	BOP	Balance of Plant
1	WP1	Unit 1 West Penetration Room
2	WP2	Unit 2 West Penetration Room
3	WP3	Unit 3 West Penetration Room

Fire Zone Name	Description
78	Unit 3 Spent Fuel Cooler Filters/Demin., Spent Fuel Coolers
79	Unit 3 RB Component Coolers
82	Unit 1 & 2 Spent Fuel Clrs, Spent Fuel Cooler Filter/Demin
83	Unit 1 & 2 RB Component Coolers
87	Unit 3 Cask Decon Tank Room
91	Unit 2 Cask Decon Tank Room
97	Unit 1 Cask Decon Tank Room

Engineering Evaluation ID	Doc. Detail	Include in LAR/TR
OSC-9298, Fire Protection Evaluation for West Penetration Room to Auxiliary Building Purge Inlet, Rev. 0, 5/5/2008		Yes

Summary

An evaluation was performed to qualify the unrated fire barrier separating the West Penetration Room and the Purge Inlet Room. The evaluation determined that the fire barrier provided reasonable assurance that a fire would not propagate through the fire area barrier and adequate fire area separation is afforded. This was based on the following:

- o Significant concrete floor construction,
- o NRC previously approved penetration seals,
- o Sealed noncombustible penetrations,
- o Low combustible loading in the area of the penetrations on the West Penetration Room and Purge Inlet Room sides of the fire barrier.

To ensure low combustible loading near the penetrations and compliance with the bases of the NRC exemption, the combustible control program is required to maintain combustible storage clear of the pipe penetrations and Reactor Building expansion joint in the Purge Inlet Rooms. (PIP O-08-2006)

Evaluation

Evaluation is deemed adequate for transition.

The technical content of the evaluation has determined that:

- o The temperature on the unexposed side of the barrier is below the ignition temperature of the penetrating items.
- o The continuity and thickness of the fire barrier material is adequate.
- o The construction of the unrated fire barrier has an acceptable fire resistance.

As verified by field walkdown and technical review, the bases for acceptability remain valid.

NFPA 805 Ch. 3 Ref.

3.11.2 Fire Barriers.

3.11.3 Fire Barrier Penetrations.

3.11.4 Through Penetration Fire Stops.

Unit	Fire Area Name	Description
1 2 3	BOP	Balance of Plant
1	WP1	Unit 1 West Penetration Room
2	WP2	Unit 2 West Penetration Room
3	WP3	Unit 3 West Penetration Room

Fire Zone Name	Description
102	Unit 2 West Penetration Room
107	Unit 1 West Penetration Room
114	Unit 3 Purge Inlet Room
117	Unit 2 Purge Inlet Room
120	Unit 1 Purge Inlet Room
98	Unit 3 West Penetration Room

K. Existing Licensing Action Transition

28 Pages Attached

Attachment K – Existing Licensing Action Transition

Licensing Action

Appendix R Exemption, Auxiliary Building Lack of 3-hour fire rated barrier (III.G.2.a criteria)

Basis Date: 8/21/1989

Transitioned? Yes

Basis: Exemption request per the 8/14/84 Duke submittal, as supplemented by the 2/28/1985 Duke letter to the NRC, provides the following justification for the lack of 3-hour fire rated barrier separation between safe shutdown circuits as required by Section III.G.2.a of Appendix R, which was approved by the NRC in a letter dated 8/21/1989.

- o Low combustible loading in pipe tunnel access area
- o Fire propagation path is circuitous, consisting of several unrated barriers and open areas
- o Combustible material would ensure slow fire development
- o Fire brigade may use portable extinguishers, manual hose stations, or a fire hose supplied from a nearby fire hydrant

In conclusion, although the exact number and configuration of combustibles may have changed over time, the bases for previous acceptance, including low combustible loading, are still valid as substantiated by OSC-9297 and field walkdown.

Unit	Fire Area Name	Description
1 2 3	BOP	Balance of Plant
1	WP1	Unit 1 West Penetration Room
2	WP2	Unit 2 West Penetration Room
3	WP3	Unit 3 West Penetration Room

Fire Zone Name	Description
103	Unit 2 East Penetration Room
108	Unit 1 East Penetration Room
59	Unit 3 Decay Heat Removal Clrs, Seal Supply Filter/Pipe Rm
66	Unit 2 Decay Heat Removal Clrs, Seal Supply Filter/Pipe Rm
75	Unit 1 Pipe Rms, Seal Supply Filter/Pipe Rm
87	Unit 3 Cask Decon Tank Room
91	Unit 2 Cask Decon Tank Room
97	Unit 1 Cask Decon Tank Room
99	Unit 3 East Penetration Room

Reference Document	Doc. Detail	Evaluation
1984-08-14 Exemption Request, Less than 20' horizontal separation, Piping Penetrations, Pen Rooms, Mechanical Pipe Penetrations in RB, 8/14/1984	Exemption 1	In the attachment to the 8/14/1984 DPC letter it states: "1. For each unit the Standby Shutdown Facility cables enter the Auxiliary Building in the southwest corner of the pipe tunnel access. These cables are located about 60 feet from Column Line U where the wall separating the east and west penetration rooms is located on the elevation above. The only intervening combustible material is plastic cable insulation and pipe penetration seal insulation described in Item 2. There is a maximum of eight cables in bundles of 2 and 3 cables within 20 feet of Standby Shutdown System cables. Considering the low concentration of combustibles, a fire would not propagate between Standby Shutdown System cables and balance-of-plant functions located in east penetration rooms. Based on the information as outlined above, separation of redundant cable required for safe shutdown in this area for each unit is adequate for fire protection. However, Duke requests an exemption to Section III.G.2.d. as the horizontal distance of 20 feet can not be maintained between safety circuits and non-safety circuits."

Licensing Action

Appendix R Exemption, Auxiliary Building Lack of 3-hour fire rated barrier (III.G.2.a criteria)

1985-02-28 Response to RAI, Additional Information Concerning the 11/11/83 Exemption Requests, 2/28/1985	Enclosure 2 - Exemption 1	In Enclosure 2, Exemption Request 1 to the 2/28/1985 DPC letter it adds: "Section III.G.2.a is the particular regulatory requirement for which an exemption is being requested. Specifically, the exemption addresses the requirement for a three hour fire rated barrier between the East Penetration room on elevation 809 and the Standby Shutdown System cables in the Pipe Tunnel Access Area on elevation 796. Within the August 14, 1984 letter, the specific Appendix R Section being cited for relief was Section III.G.2.a. as noted herein. The specific regulation for which Duke is requesting an exempt is 10CFR50, Section III.G.2.a. The attached figure (Attachment 1) illustrates the general area of concern. The combustible material on the general area consists of exposed plastic cable insulation. There are eight bundles of two or three cables each within twenty feet of the Standby Shutdown Facility (SSF) cables. All cables in the Pipe Tunnel Access Area, except the SSF cables, are in four or six inch wide electrays which is indicative of the small quantity of combustible material through the area. In order for fire to damage redundant circuits, fire would have to propagate from the exterior wall in the "far corner of the room", (See Attachment 1), about 60 feet around the curvature of the Reactor Building wall. The concrete wall of the fuel transfer canal is located at Column Line R. At this point, fire would have to propagate beneath the floor slab into the Pipe Tunnel, which has no combustible material, for about 40 feet. At that time, fire would have to propagate back into the east side of the Pipe Tunnel Access Area (on elevation 796). Combustible material in this area, again, consists of small quantities of exposed plastic cable insulation for light fixtures, etc., located in electray as described above. Fire would then have to propagate through the ceiling slab through the cork filler material in the seismic expansion joint (3 inch exposed surface) or through non-fire rated mechanical pipe penetration sealant material in the concrete slabs between elevation 796 and 809. In addition, there is no equipment associated with shutdown functions between the SSF cables at the exterior corner of the Pipe Tunnel Access Area on elevation 796 and the east Penetration room on elevation 809. If the fire were to occur in the Pipe Tunnel Access Area, heat would dissipate throughout the area (west side about 60 feet wide, 60 feet deep and 13 feet high; east side about 40 feet by 40 feet, 13 feet high), the minimal in situ combustible loading would not significantly contribute to fire propagation. The station fire brigade could use portable fire extinguishers or a fire hose supplied from a fire hydrant to extinguish fire in the area. Based on the above information, it is not conceivable for a single fire to damage redundant trains of equipment required for hot shutdown in the East Penetration room and the west side of the Pipe Tunnel Access Area. However, an exemption is required as the horizontal distance of 20 feet cannot be maintained between safety circuits and non-safety circuits."

Licensing Action

Appendix R Exemption, Auxiliary Building Lack of 3-hour fire rated barrier (III.G.2.a criteria)

1989-08-21 NRC SER, Exemption from the Fire Protection Requirements of Section III.G of 10 CFR 50, Appendix R, 8/21/1989	Item 3	In the SER attachment the NRC states: "3. Pipe Tunnel Access Area Duke requested an exemption from the technical requirements of Section III.G.2.a of Appendix R because the pipe tunnel access area holding the standby shutdown system cables located in the pipe tunnel access area does not have a 3-hour, fire-rated barrier separating it from the east penetration room above. In evaluating the exemption request, the staff considered the amount of combustible loading and manual fire suppression. First, the combustible loading in the pipe tunnel access is low. If a fire were to occur, it would develop slowly. Also, the fire propagation path between the standby shutdown system cables and the east penetration room is circuitous, consisting of several unrated barriers and open areas. Second, the fire brigade may use the portable extinguishers, manual hose stations, or a fire hose supplied from the fire hydrant to extinguish the fire. Thus, the staff finds that the low combustible loading and manual fire suppression provide reasonable assurance that the fire will not propagate between the pipe tunnel access area and the east penetration room above. Therefore, the staff concludes that the existing separation between the pipe tunnel access area and the east penetration room provides a level of fire protection equivalent to the technical requirements of Section III.G.2.a of Appendix R."
OSC-9297, Fire Protection Evaluation for West Penetration Pipe Tunnel Area to Auxiliary Building, Rev. 0, 5/5/2008		This calculation verifies that a fire in the Spent Fuel Cooler Rooms or adjacent fire zones (Balance of Plant Fire Area) will not feasibly propagate to the Cask Decon Tank Rooms (West Penetration Fire Area) resulting in damage to SSF cables. This evaluation documents fire protection features needed to protect nuclear safety-related structures, systems, or components which are designated as QA Condition 3 systems.

Licensing Action

Appendix R Exemption, Auxiliary Building Lack of 3-hour fire rated penetration seals (III.G.2.a criteria)

Basis Date: 8/21/1989

Transitioned? Yes

Basis: Exemption request per the 8/14/1984 Duke submittal, as supplemented by the 2/28/1985 Duke letter to the NRC, provides the following justification for the lack of 3-hour fire rated barrier separation between safe shutdown circuits as required by Section III.G.2.a of Appendix R, which was approved by the NRC in a letter dated 8/21/1989.

Armaflex and Rubatex used to seal pipe penetrations are acceptable because:

- Predominant combustible in area is cable insulation
- Limited combustibility of the pipe insulation material (Armaflex and Rubatex)
- Ceiling height of West Penetration Room is 25 feet
- Smoke detectors are provided in West Penetration Room
- Fire brigade response is adequate for hazard using portable extinguishers and manual hose stations

The exemption request applies only to the ceilings of the West Penetration Rooms.

In conclusion, the bases for previous acceptance are still valid as substantiated by field walkdown.

Unit	Fire Area Name	Description
1	WP1	Unit 1 West Penetration Room
2	WP2	Unit 2 West Penetration Room
3	WP3	Unit 3 West Penetration Room

Fire Zone Name	Description
102	Unit 2 West Penetration Room
107	Unit 1 West Penetration Room
114	Unit 3 Purge Inlet Room
117	Unit 2 Purge Inlet Room
120	Unit 1 Purge Inlet Room
98	Unit 3 West Penetration Room

Reference Document	Doc. Detail	Evaluation
1984-08-14 Exemption Request, Less than 20' horizontal separation, Piping Penetrations, Pen Rooms, Mechanical Pipe Penetrations in RB, 8/14/1984	Exemption Request 2	In the attachment to the 8/14/1984 DPC letter it states: "2. Piping penetrations in floors and ceilings of east and west penetration rooms are sealed with materials used for ventilation control which are not approved fire rated assemblies. Penetrations consist of pipe sleeves with a single layer of "Rubatex" insulation attached to the sleeve. "Rubatex" has flame spread rating of 25, fuel contribution rating of 30, and smoke development of 100. Considering the small quantity of material as low flame spread fuel contribution characteristics, "Rubatex" insulating material as installed will not support fire development. In addition, there are no penetrations in the vicinity of Column Line U where the wall separating east and west penetration rooms is located. The only combustible material in the pipe tunnel access area is cable insulation as described in Item 1. Considering the above, the existing arrangement is adequate for fire protection of redundant trains of cables in the east and west penetration rooms."

Licensing Action

Appendix R Exemption, Auxiliary Building Lack of 3-hour fire rated penetration seals (III.G.2.a criteria)

1985-02-28 Response to RAI, Additional Information Concerning the 11/11/83 Exemption Requests, 2/28/1985	Enclosure 2 - Exemption Request 2	In Enclosure 2 to the 2/28/1985 DPC letter it adds: "Armaflex" and "Rubatex" insulating materials are used to seal penetrations at floor and ceilings of the East and West Penetration rooms where pipes penetrate the structural slab. "Armaflex" is described in the Oconee Nuclear Station Fire Protection Safety Evaluation Report dated August 11, 1978, Section 4.9.1. Material Data sheet for Armaflex, submitted by letter from W. O. Parker to E. G. Case of January 25, 1978, stated that standard Armaflex has a flame spread rating of 50 or less and standard 1/2 inch thicknesses. "Rubatex" has a flame spread rating of 25. Inasmuch as Rubatex has lower flame spread rating than Armaflex, which has been previously reviewed and accepted, and the potential for fire spread between East and West Penetration rooms through this material is negligible, an exemption from the requirements of Appendix R, Section III.G.2.a for three hour fire rated barrier at these pipe penetrations is required. As stated in exemption Request 1 above, fire hoses and portable fire extinguishers are available for fire suppression."

Licensing Action

Appendix R Exemption, Auxiliary Building Lack of 3-hour fire rated penetration seals (III.G.2.a criteria)

1989-08-21 NRC SER, Exemption from the Fire Protection Requirements of Section III.G of 10 CFR 50, Appendix R, 8/21/1989	Item 4	In the SER attachment the NRC states: "4. East and West Penetration Rooms Duke requested an exemption from the technical requirements of Section III.G.2.a of Appendix R for pipe penetrations through the floor and ceilings of the penetration rooms. The licensee stated that "Armaflex" and "Rubatex" insulating materials are used to seal pipe penetrations through the floor and ceilings of the east and west rooms. Armaflex is described in the Oconee Nuclear Station Fire Protection Safety Evaluation Report dated August 11, 1978, and has a flame spread rating of 50. Rubatex is a similar material with a flame spread of 25. The licensee has stated that due to the presence of this insulating material at pipe penetrations, an exemption is required from the specific technical requirements of Section III.G.2.a of Appendix R. By letter dated April 21, 1987, Duke stated that the west penetration room and cask decontamination rooms are considered a single fire area. Therefore, the exemption request applies only to the ceilings of the west penetration room. The pipe penetrations through the ceiling of the west penetration room do not comply with the technical requirements of Section III.G.2.a of Appendix R because of the pipe insulation materials installed. The insulating materials used are known as Armaflex and Rubatex. The west penetration room contains only one train of equipment necessary to achieve safe shutdown. The penetration room is constructed of reinforced concrete and has a ceiling height of approximately 25 feet. The predominant combustible within the room is cable insulation. Smoke detectors are provided for the west penetration room. These detectors alarm in the main control room. If a fire occurs, it should be detected in its early stages and alarmed in the main control room. The fire brigade will be dispatched to the area to extinguish the fire using the portable extinguishers and manual host stations provided. By letter dated May 11, 1984, information concerning Rubatex was submitted to the staff as part of the licensing review for the Catawba Nuclear Station. The staff has accepted the use of this material as described in Supplement 3 to the Catawba Nuclear Station Safety Evaluation Report (SSER3) dated July 1984. The Rubatex insulation has a Flame Spread Index of 25, a Smoke Development Index of 100 (maximum), and a Fuel Contribution Index of 30. For the Oconee Nuclear Station, "Armaflex", a similar material with a flame spread index of 50 or less, was submitted to the staff for review by Duke's letter dated January 25, 1978. The use of this material in an arrangement similar to that used in the ceiling of the west penetration room was accepted as described in the Oconee Fire Protection Safety Evaluation Report dated August 11, 1978. Because of the limited combustibility of the insulation material, it is unlikely that a fire would propagate through the penetration seals from one fire area to the other. Should a fire occur in the penetration room, it would be detected in its incipient stage. The alarms from the detectors annunciate in the control room where the fire brigade would be dispatched to extinguish the fire manually. Based on the above evaluation, previous acceptance of the insulating material, and the staff review of site conditions, the staff concludes that the piping penetrations at the ceiling of the west penetration room, provide reasonable assurance that a fire would not propagate through the barrier and, therefore, provide a level of fire protection equivalent to the technical requirements of Section III.G.2.a of Appendix R."

Licensing Action

Appendix R Exemption, Auxiliary Building Non-rated Expansion Joints (III.G.2a criteria)

Basis Date: 8/21/1989

Transitioned? Yes

Basis: Exemption request per the 11/11/1983 Duke letter, as supplemented by the 2/28/1985 and 4/21/1987 Duke letters to NRC, provides the following justification for the lack of 3-hour fire rated barrier separation between safe shutdown circuits as required by Section III.G.2.a of Appendix R, which was approved by the NRC in a letter dated 8/21/1989:

- o Low combustible loading in area.
- o No fixed combustibles are near exposed cork.
- o Penetration rooms have a 25 foot ceiling height.
- o Smoke detectors are installed in this area.
- o Manual suppression (portable extinguishers and hose statiosns) available for fire brigade response
- o Separation distance of safe shutdown equipment is adequate.

The exemption request applies only to the cork in expansion joint between the Auxiliary Building and Reactor Building at the ceiling of the West Penetration Rooms.

In conclusion, previously approved as a limited combustible, Armaflex or Rubatex insulation material has been installed on the surface of the cork expansion joints for protection and requires further clarification to ensure its continued acceptability as the bases for the exemption. The clarification is being requested in the License Amendment Request Attachment T and is tracked as an open item. The remaining bases for previous acceptance are still valid, as substantiated by OSC-9298 and field walkdown. Improvements to the Control of Combustible program have been initiated as noted in PIP-O-08-2006.

Unit	Fire Area Name	Description
1 2 3	BOP	Balance of Plant
1	WP1	Unit 1 West Penetration Room
2	WP2	Unit 2 West Penetration Room
3	WP3	Unit 3 West Penetration Room

Fire Zone Name	Description
102	Unit 2 West Penetration Room
107	Unit 1 West Penetration Room
114	Unit 3 Purge Inlet Room
117	Unit 2 Purge Inlet Room
120	Unit 1 Purge Inlet Room
98	Unit 3 West Penetration Room

Reference Document	Doc. Detail	Evaluation
1983-11-11 Exemption Request, East-West Penetration Room Separation and Reactor Bldg Separation , 11/11/1983	Exemption 3	In Item 3 of Attachment of the 11/11/1983 DPC letter it states: "Compressed cork is installed as filler material in the seismic expansion joint between the Auxiliary Building and Reactor Buildings. During discussions with the Staff during 1978 in which the Standby Shutdown System concept was discussed, Duke agreed to construct a fire resistive wall between the East and West Penetrations Rooms to separate redundant cable trains required for safe shutdown. When Appendix R was issued this wall (as described above) was considered sufficient to fulfill the requirement of Section III.G.2.z. The areas below the penetration room, the personnel access portal areas, will be protected with automatic sprinkler systems. It is planned to have this effort complete by May 1, 1984. Personnel routinely transit through these areas and a fire would be detected and fire fighting activities promptly initiated. Sufficient ceiling height and room volume exists to dissipate a fire generated thermal plume. Considering the above, the existing arrangement is adequate for fire protection of redundant trains of cables in the East and West Penetration Rooms. We believe the evaluation of this application is consistent with those for which the Staff has previously approved alternatives, as described in SECY 83-269, Attachment A, Section 1.2.3. Inasmuch as this configuration has not been explicitly accepted and it is not a three-hour barrier, Duke requests an exemption."

Licensing Action

Appendix R Exemption, Auxiliary Building Non-rated Expansion Joints (III.G.2a criteria)

1985-02-28 Response to RAI, Additional Information Concerning the 11/11/83 Exemption Requests, 2/28/1985	Enclosure 1, Item 3	In Enclosure 1, Item 3 of the 2/28/1985 DPC letter it states: "Duke is requesting exemption from requirements of Appendix R, Section III.G.2.a, for separation of the East/West Penetration rooms. Cork filler is installed in the seismic expansion joint between Auxiliary Building floor slabs and the Reactor Building wall. A three hour fire resistive wall assembly has been constructed to separate East/West Penetration rooms. Cork is embedded in concrete slabs above and below the wall assembly adjacent to Reactor Building walls. There are three inches of exposed cork surface. In other areas on the elevation beneath the wall which separates the East/West Penetration rooms for each unit, automatic sprinklers are provided which mitigate the possibility of fire spread from the area below. There are no in situ combustible material in close proximity to the cork filler material as it passes above the below the wall separating East/West Penetration rooms, which would contribute to the possibility of igniting cork material. Penetration rooms are large volume areas with about 25 foot ceilings, in which case heat from a fire plume in either Penetration room would tend to expand throughout the area and be dissipated rather than concentrating at the three inches of exposed cork filler material. In addition, the area above East/West Penetration rooms contains air handling equipment. The combustible loading is small (consisting of exposed plastic cable insulation for fan motors, lights, etc.). There are no combustible materials in close proximity to the three inches of exposed cork which could contribute to ignition of the cork. Thus, a fire is not expected to spread between redundant Penetration rooms via cork embedded in floor and ceiling slabs above and beneath the fire-rated wall which separates the East/West Penetration rooms. Fire hoses and portable fire extinguishers are available to suppress a fire in this area."
1987-04-21 Response to RAI, Additional Information Concerning the 11/11/83 Exemption Requests, 4/21/1987	Response 1	In the attachment to the 4/21/1987 DPC letter additional information was provided: "The west penetration room for each unit at elevation 809' is combined with the cask Decontamination Rooms (Units 1 and 2 share a Decontamination room, while Units 3 has its own) at elevation 796' to form a single fire area. This combined fire area is bounded on the east by a concrete wall at elevation 796', and by the pyrocrete/steel wall at elevation 809'. On the other two sides the fire area is bounded by the reactor building walls and exterior walls. A pipe trench is routed beneath the concrete structure of the refueling canal (at elevation 796') on the east side. The only combustible material in the trench is plastic insulation on cables routed into the cask Decontamination Room. By combining the west penetration rooms and the cask Decontamination rooms into a single fire area, the exemption request number three (3) of the November 11, 1983 Duke submittal for the cork at the west penetration room floor between the reactor and the Auxiliary Buildings is not necessary. Accordingly, this specific exemption request should be modified to address only the cork between the respective buildings at the ceiling of the west penetration room for each unit. An evaluation of the combustible loading for the Unit 3 west penetration room was performed. The combustible loading for the Unit 3 west penetration room is considered to be typical for each unit. The evaluation indicated a combustible loading of 91,243 Btu/ft. The in-situ combustible material consists entirely of plastic cable insulation and is spread throughout the west penetration room. Fire hose stations and portable fire extinguishers are available for fire suppression. The west penetration rooms contain one (1) train of equipment necessary for safe shutdown of the Unit. The redundant train of equipment for safe shutdown is not located in the west penetration room. The results of an associated circuits analysis indicates that the redundant safe shutdown equipment would not be effected by a fire in this area.

Licensing Action

Appendix R Exemption, Auxiliary Building Non-rated Expansion Joints (III.G.2a criteria)

1989-08-21 NRC SER, Exemption from the Fire Protection Requirements of Section III.G of 10 CFR 50, Appendix R, 8/21/1989	Item 1	In the SER attachment the NRC states: "1. Auxiliary and Reactor Buildings - Expansion Joints Duke requested an exemption from the technical requirements of Section III.G.2.a of Appendix R because the seismic expansion joints, used in fire barriers between the auxiliary building and the reactor building, are not rated for 3-hour fire resistance. The auxiliary building is next to the reactor building; these two buildings are above the east and west penetration rooms. A 3-hour fire resistive barrier was constructed to separate the east from the west penetration room. These fire barriers separate trains of safe shutdown equipment and associated circuits. Cork is embedded in the concrete slabs above and below the wall adjacent to the reactor building wall. Duke states that the exemption request is only for the compressed cork in the expansion joints, located between the auxiliary building floor slabs and the reactor building walls at the ceiling of the west penetration room. The joints have compressed cork installed as filler material. Because the compressed cork in the expansion joints is not a 3-hour, fire-rated assembly, Duke evaluated the acceptability of using these joints in fire-rated barriers. In evaluating the exemption request, the staff considered the following three characteristics about the penetration rooms: (1) the amount of combustible material (also called combustible loading); (2) the installed smoke detectors; and (3) the distance between the combustibles and the cork. First, the combustible loading of the area is low. It consists primarily of cable insulation for fan motors and lights. No fixed combustibles are installed near the exposed cork. The penetration rooms, constructed of reinforced concrete, have a ceiling height of about 25 feet. The area above the east and west penetration rooms contains only air handling equipment. The west penetration room contains only cables of one train of equipment necessary to achieve safe shutdown. If a fire were to occur, the redundant safe shutdown equipment would not be affected. Because this area has low combustible loading, the area is unlikely to have a fire that would propagate through the expansion joints and into the east and west penetration rooms and damage the redundant safe shutdown equipment. Second, smoke detectors have been installed by Duke throughout the east and west penetration rooms. These detectors alarm in the main control room. If a fire were to occur, the smoke detectors would give the reactor operators early warning. Although this area does not have fire suppression, it does have portable extinguishers and manual hose stations. After receiving the alarm, the reactor operators would dispatch the fire brigade to the area; the fire brigade would then extinguish the fire by using the portable extinguishers and manual hose stations. Finally, the distance between the combustibles and the exposed cork and also the separation between the two trains of safe shutdown equipment provide sufficient protection to ensure the ability to achieve and maintain safe shutdown until Duke extinguishes the fire. Thus, the staff finds that the low combustible loading, the automatic fire detection, the passive protection of fire area boundaries, and the separation of safe shutdown equipment provide reasonable assurance that the fire brigade would be able to extinguish a fire before it develops to the point of preventing a safe plant shutdown. Furthermore, the staff finds acceptable the compressed cork used in the seismic expansion joints located at the ceiling of the west penetration room, for each of the three units, because the cork does not decrease the level of fire protection. Therefore, the staff concludes that Duke's fire protection features meet the underlying purpose of the rule because they provide an equivalent level of fire protection as would literal compliance with Appendix R."

Licensing Action

Appendix R Exemption, Auxiliary Building Non-rated Expansion Joints (III.G.2a criteria)

OSC-9298, Fire Protection Evaluation for West Penetration Room to Auxiliary Building Purge Inlet, Rev. 0, 5/5/2008	This calculation qualifies the unrated fire barrier separating the West Penetration Room and the Purge Inlet Room. This evaluation documents fire protection features needed to protect nuclear safety-related structures, systems, or components which are designated as QA Condition 3 systems.

Licensing Action

Appendix R Exemption, Lack of Control Room suppression (III.G.3 criteria)

Basis Date: 2/2/1982

Transitioned? Yes

Basis: Exemption request per 4/30/1981 Duke letter to NRC provides the following justification for the lack of full area automatic suppression required by App. R, Section III.G.3, which was approved by the NRC in a letter dated 2/2/1982:

- o Remote Standby Shutdown Facility separate from Control Room by 3-hour fire barriers.
- o Fire detection system installed in Control Room.
- o Hose station and fire extinguishers installed within Control Room.
- o Continuous manning of Control Room to promptly use manual suppression.

The February 2, 1982 letter from the NRC to Duke approving the exemption includes the statement the hose stations and fire extinguishers are installed within the Control Room. This statement was not made in the submittals from Duke to the NRC. Extinguishers are provided in the Oconee Units 1 & 2, and Unit 3 Control Rooms. However hose stations are provided outside of the control room. These are positioned for access to the Control Room in the event of a fire. The Unit 1& 2 Control Room has three hose stations: one is located just outside the Unit 1 Control Room Lobby on the Turbine Building Operating Deck, the second is in the SPA outside of the Unit 2 Control Room access door, and the third is in the back stairway of the Control Room. The Unit 3 Control Room has two hose stations, one located in the office area on the Turbine Building Operating Deck outside of the north Control Room access door and one located in the back stairway of the Control Room. Clarification of the approval will be requested in the LAR.

In conclusion, the bases for previous acceptance are still valid as substantiated by field walkdown.

Unit	Fire Area Name	Description
1 2 3	BOP	Balance of Plant

Fire Zone Name	Description
110	Unit 1 & 2 Control Room
112	Unit 3 Control Room

Reference Document	Doc. Detail	Evaluation
1981-04-30 Exemption Request, Reactor Bldg Separation and Lack of CR Suppression, 4/30/1981		In Attachment III to the 4/30/1981 DPC letter it states: "With installation of the Standby Shutdown Facility (SSF) there will be two independent areas from which a hot shutdown condition can be achieved and maintained. As indicated in the previous submittal, cabling for these two independent systems are routed through the east and west penetration rooms to the Reactor Building. Since cabling for the SSF is routed directly through the penetration room to the Reactor Building and does not interface with any other plant areas Duke Power Company requests an exemption to Section III.G.3 of the rule which requires that "a fixed fire suppression system ... be installed in the ... zone under consideration." The zone under consideration, the Control Room, is separated by physical separation and 3-hour fire barriers from the penetration room where redundant SSF cabling enters Auxiliary Building and routes to Reactor Building. Fire detector devices are presently installed in the Control Room. No fixed fire suppression system is deemed necessary in light of the existing commitment to install the SSF."

Licensing Action

Appendix R Exemption, Lack of Control Room suppression (III.G.3 criteria)

1982-02-02 NRC SER, Lack of CR Suppression, 2/2/1982	In the SER attachment the NRC states: "The licensee's exemption request is based on the following: o An alternate shutdown system is being provided remote from the control room. This alternate shutdown system provides remote control capabilities for those systems needed to maintain hot shutdown. o A fire detection system has been installed in the control room. o A hose station and fire extinguishers have been installed inside the control room. The modifications which the licensee's exemption request is based on are required by Appendix R to 10 CFR Part 50. Therefore, the above modifications alone do not justify an exemption from the requirement to install a fixed fire suppression system in areas where redundant divisions are located. However, the control room is a unique area of the plant that is required to be continually occupied by the operators. In the event of a fire, manual fire suppression would be effective and prompt. Because the operators provide a continuous fire watch in the control room, a fixed suppression system is not necessary to achieve adequate fire protection in the control room. This is similar to the concept reflected in the NRC staff's acceptance, on a short term basis, of a continuous fire watch as an alternative to fixed suppression systems when such systems become unavailable per the Oconee Technical Specifications. Based on our evaluation, we conclude that the licensee's fire protection features for the control room meet the objectives of Section III.G, "Fire Protection of Safe Shutdown Capability", of Appendix R to 10 CFR Part 50, and, therefore, the licensee's request to be exempted from the requirement to provide a fixed fire suppression system in the control room should be granted."

Licensing Action

Appendix R Exemption, Outside and SSF Emergency Lighting (III.J criteria)

Basis Date: 12/27/1984

Transitioned? Yes

Basis: Exemption request per the 10/24/1983 Duke submittal, as supplemented by the 8/8/1984 letter to the NRC, provides the following justification for the lack of 8-hour emergency lighting as required by Section III.J of Appendix R, which was approved by the NRC in a letter dated 12/27/1984.

Outside Auxiliary Building:
- o Security lighting
- o Battery powered hand lanterns

SSF:
- o Independent AC lighting system for SSF
- o Backup DC system powered from batteries in SSF with 90 minute capacity
- o Auxiliary diesel generator capable of continuous charging to the DC batteries of SSF longer than 8 hours

New security barriers installed may obstruct previous lighting arrangements. In the December 27, 1984 exemption approval the NRC stated " the lighting provided outside the auxiliary building which is backed up by the hand lanterns is adequate ensure safe operator access to the SSF": Although the new security barriers may obstruct the previous lighting arrangements, based on the statement in the exemption approval, the hand held lanterns are sufficient for access from the Auxiliary Building to the SSF. The handheld lanterns are maintained in procedure PT/0/B/0120/032.

In conclusion, the bases for previous acceptance are still valid as substantiated by field walkdown.

Unit	Fire Area Name	Description
1 2 3	BH12	Unit 1 & 2 Block House
1 2 3	BH3	Unit 3 Block House
1 2 3	BOP	Balance of Plant
1 2 3	YARD	Yard Area

Reference Document	Doc. Detail	Evaluation

Licensing Action

Appendix R Exemption, Outside and SSF Emergency Lighting (III.J criteria)

1983-10-24 Exemption Request, Emergency Lighting, 10/24/1983	Attachment 1	In Attachment 1 to the 10/24/1983 DPC letter it states: "Pursuant to 10 CFR 50, §50.12, Duke Power Company requests the following exemptions to 10 CFR 50, §50.48 and Appendix R. Section 50.48(b) requires that Appendix R, III.J., Emergency Lighting, be implemented at Oconee Nuclear Station on a schedule as defined in §50.48(c). Duke made an initial submittal in response to this regulation in a letter dated March 18, 1981. Attachment 2 to that letter described the lighting systems at Oconee and concluded that the emergency lighting systems at Oconee met the intent of Appendix R, III.J. Duke has received no NRC feedback from that submittal. In recent months, Duke Power has become aware of recent NRC actions relative to Appendix R requirements at several utilities. Duke is also aware that the NRC has approved several exemptions to this requirement where alternative light sources were found equally reliable (SECY-83-269). It is with these recent NRC actions in mind that Duke has decided to submit this exemption request. The specific requirement of III.J is that: Emergency lighting. Emergency lighting units with at least an 8-hour battery power supply shall be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto. The design of Oconee is such that the control of a unit at hot shutdown will either be in its Control Room or in the Standby Shutdown Facility (SSF). No other areas of the plant are required for operation of safe shutdown equipment. However, as the Control Room is normally manned, and the SSF is not, the stairwells, corridors, and the outside area between the two buildings required for passage between the Control Room and SSF are necessary to be lighted to meet the rule. The following paragraphs provide evaluation of these areas relative to the emergency lighting requirement. Control Room - Each Oconee Control Room has normal and emergency lighting as previously described in Duke letter of March 18, 1981. The design of the lighting system is such that it meets the intent of III.J. Personnel could easily be dispatched from this Control Room through the stairwells and corridors to the SSF which, as discussed further on, would remain lighted. No credible fire can cause all the lighting in the Control Room to be lost. However, if that were to occur, control of the unit would be shifted to the SSF. However, in order to provide additional protection, Duke will install 8-hour battery backed emergency lighting by May 1, 1984 in each Control Room. Thus, Duke requests an exemption to the scheduler requirement of 50.48(c) to allow interim operation of Oconee with the existing lighting system design until completion of the above modification. Stairwells/Corridors - Stairwells and corridors between the Control Rooms and the SSF would be used by operators to get to the SSF in the event the fire was going to cause the Control Room to be lost. These areas are used for momentary passage only and no equipment need be operated therein. Each of these areas has normal and emergency lighting as previously described in Duke letter of March 18, 1981. The design of the existing lighting system is such that it meets the intent of III.J. No credible fire can cause all of the lighting in these areas to be lost. However, if that were to occur, it is not credible that lighting in the Control Room would also be lost. Thus, passage through these areas would not be necessary. However, in order to provide additional protection, Duke will install 8-hour battery backed emergency lighting by May 1, 1984 in the stairwells and corridors from each Control Room to an outside door of the Auxiliary Building which leads to the SSF. Thus, Duke requests an exemption to the scheduler requirement of 50.48(c) to allow interim operation of Oconee with the existing lighting system design until completion of the above modification. Outside Auxiliary Building - This area would be used for momentary passage of the operators from the Auxiliary Building to the SSF. It is normally well lit by daylight or by security lighting which is powered from several sources. No credible fire can cause all the security lighting in the

area to be lost: Further, if such a loss were to occur, it is not credible to postulate a total loss of Control Room simultaneously due to separation of the security lighting from safety systems. Thus, the control of the unit would be maintained in the Control Room and this area would not be required for passage. Thus, it is concluded that the intent of III.J is met. Duke requests an exemption to the requirement for an 8-hour battery backed emergency lighting system for this area as the existing security lighting provides sufficient light to allow passage from the Auxiliary Building to the SSF in the event a fire causes a total loss of the Control Room. Standby Shutdown Facility - The SSF was designed, in part, to provide an alternate means to mitigate the consequences of a fire that cause the operators to be unable to control a unit at hot shutdown from the existing Control Room. The initial design description of the SSF was submitted by Duke letter dated March 28, 1980 and supplemented with several letters. The NRC approved the design by letter dated April, 28, 1983. Duke letter of March 18, 1981 briefly described the SSF lighting system design. As stated above, the SSF would be used to control a unit at hot shutdown if a fire caused a loss of the normal Control Room. It is not credible that a fire could cause both a loss of the normal Control Room and the SSF due to SSF design which is completely separate from existing plant electrical systems.

If a fire were to cause the normal Control Room to be lost, the SSF would remain fully operable with its own electrical power and capable of maintaining the unit at hot shutdown. If a fire were to occur within the SSF, it would be fully contained, and not cause a loss of the existing Control Rooms, where control of the units would remain. However, the SSF, which contains standby safe shutdown equipment, does not have emergency lighting with an 8-hour battery power supply as required by the rule. Rather, the SSF has 1 1/2-hour emergency lighting which is backed by the SSF diesel generator. Thus, it is concluded that the intent of III.J is met. Duke, however, requests an exemption to the requirement for an 8-hour battery backed emergency lighting system for the SSF itself as the existing SSF design of separation from the normal plant systems fully meets the intent of III.L; additional battery backed lighting in the SSF itself is unnecessary."

1984-08-08 Supplementary Information, Emergency Lighting, 8/8/1984

In the body of the 8/8/1984 DPC letter it states:

"During discussions on June 19, 1984, between members of your Staff and mine on this subject, a request for providing "flashlights" for use by the operators in transit to the Standby Shutdown Facility (SSF) was made. To assure the safe passage of the operators from the Central Room to the SSF, Duke has installed 8-hour battery backed emergency lighting in each control room, and in the stairwells and corridors from each central room to an outside door of the Auxiliary Building leading to the SSF. Outside the Auxiliary Building the area is normally well lit by daylight or by Security lighting which is powered from several sources.

However, in the highly unlikely event of complete loss of off-site power and a fire requiring activation of the SSF, the operators can obtain flashlights from the following location:

1) A cabinet located in the control room where several flashlights and spare batteries are stored.
2) The Fire Brigade cabinet located just outside each control room where several flashlights and spare batteries are stored.

These two sources of flashlights assure that the operators can obtain, if required, a flashlight to assist them in their safe passage to the SSF. Due to the minimum number of personnel required to activate and operate the SSF only one flashlight needs to be obtained for each control room to assure the safe passage of the operator(s) that have been dispatched to the SSF."

Licensing Action

Appendix R Exemption, Outside and SSF Emergency Lighting (III.J criteria)

1984-12-27 SER, Emergency Lighting, 12/27/1984	In the SER attachment the NRC states: "By letter dated October 24, 1983 as supplemented on August 8, 1984, the licensee requested an exemption from Section III.J for eight-hour battery powered emergency lighting for the yard access route outside the auxiliary building and the standby shutdown facility (SSF) at the Oconee Nuclear Station. The SSF is a structure separated from those other areas of the plant which contain equipment normally used for safe shutdown. The emergency shutdown equipment and controls located in the SSF will be used to maintain the plant in a safe shutdown condition if a fire damages normal plant controls or shutdown equipment. In the event of a fire necessitating use of the SSF, the plant operators would leave the main control room, pass through the auxiliary building and across the yard to the SSF. In a letter dated August 8, 1984, the licensee states that he met his commitment to install by May 1, 1984, eight-hour battery backed emergency lighting in the control room for each unit. Additionally, the licensee has committed to install eight-hour battery backed emergency lighting in the stairwells and corridors from each unit's control room to an outside door of the auxiliary building. Illumination for the yard area between the auxiliary building and the SSF is provided by security lighting. The security lighting can be powered from onsite sources in the event of a loss of offsite power. To ensure safe operator access to the SSF, the licensee has committed to provide battery powered hand lanterns for operator usage. Lighting for the SSF itself is provided by an AC lighting system and a backup DC system which is powered from batteries located in the SSF. The DC lighting system has a 90 minute capacity without recharge. The DC lighting system actuates on loss of AC power. Additionally, the SSF houses an auxiliary diesel generator which provides the emergency power for plant shutdown from the SSF. This auxiliary diesel generator is capable of providing continuous charging to the DC batteries of the SSF. Since the SSF is provided with an independent lighting system with the capability of continuous lighting in excess of the eight-hour battery requirement, we conclude that the exemption from the battery-powered emergency lighting requirement of Section III.J of Appendix R to 10 CFR 50 for the SSF is justified. Since the lighting provided outside the auxiliary building which is backed by the hand lanterns is adequate to ensure safe operator access to the SSF, we conclude that the exemption from the eight-hour battery powered emergency lighting requirement of Section III.J of Appendix R to 10 CFR 50 for the yard access route outside the auxiliary building is also justified. Therefore, we conclude that the Appendix R, Section III.J, exemption for Oconee Units 1, 2 and 3 should be granted."

Licensing Action

Appendix R Exemption, Reactor Building 20 feet separation w/o intervening combustibles (III.G.2.d criteria)

Basis Date: 8/21/1989

Transitioned? Yes

Basis: Exemption request per the 11/11/1983 Duke submittal, as supplemented by the 2/28/1985 Duke letter to NRC, provides the following justification for the lack of 20 feet horizontal distance separation between safe shutdown circuits with no intervening combustibles, which was approved by the NRC in a letter dated 8/21/1989.

For 20 feet separation with intervening combustibles:
- o More than 20 feet separation
- o Low concentration of cables in cable trays
- o Cable insulation is comparable to IEEE-383 qualified cables which burn slowly with an initial low rate of heat release
- o Fire brigade response would be adequate

Walkdowns of Units 1, 2 and 3 will be performed per PIP-O-08-2006 to verify and validate that the exemption bases inside the Reactor Buildings remain as described. In the interim, the existing controls on combustibles, restrictions on containment entry, and containment closeout inspections conducted prior to restart ensure that transient combustible material in the containment has been adequately minimized.

For pressurizer level 15 feet separation (Unit 1 Only):
- o No intervening combustibles
- o Low combustible loading in general area
- o Administrative controls to limit transient combustibles in area
- o Inspections prior to starting the unit after an outage
- o Reactor building is a huge structure to dissipate heat from a fire
- o Fire brigade response would be adequate

The Unit 1 Reactor Building was walked down on May 21, 2008 to validate pressurizer level instrument exemption bases. The fixed combustible loading was verified to be low as described in the exemption, however further clarification is required regarding the spatial separation of the Unit 1 Pressurizer Level Instruments. The transmitters' physical location within the Reactor Building is less than the 15 feet described in the exemption documentation. This is being resolved under PIP O-08-03241 The remaining bases for acceptability remain valid.

Unit	Fire Area Name	Description
1	RB1	Unit 1 Reactor Building
2	RB2	Unit 2 Reactor Building
3	RB3	Unit 3 Reactor Building

Fire Zone Name	Description
122	Unit 1 Reactor Building - Basement thru 4th Floor
123	Unit 2 Reactor Building - Basement thru 4th Floor
124	Unit 3 Reactor Building - Basement thru 4th Floor

Reference Document	Doc. Detail	Evaluation

Licensing Action

Appendix R Exemption, Reactor Building 20 feet separation w/o intervening combustibles (III.G.2.d criteria)

1983-11-11 Exemption Request, East-West Penetration Room Separation and Reactor Bldg Separation , 11/11/1983	Exemption Request 4	In the attachment to the 11/11/1983 DPC letter it states: "4. Inside each Reactor Building redundant trains of equipment required for safe shutdown are generally located on opposite sides of the building. By letter dated April 30, 1981, Duke Power provided an evaluation of the cable separation inside each Oconee Reactor Building. In that submittal, one instance was identified where less than 20 feet separation existed. In the Unit 1 Reactor Building, SSF pressurizer level transmitter (LT-72) is separated from the balance of plant instrument by approximately 15 feet with no intervening combustibles. In areas between redundant instruments required for safe shutdown, cable concentrations are low, generally one or two cable trays per location. Since the cable is comparable to IEEE-383 qualified cable, the plastic insulation is considered "fire retardant". Cables have metallic sheathing beneath the insulation which will prevent an internal short from propagating to adjacent cables, thereby causing a fire. Therefore, a postulated fire in the Reactor Building would have to involve transient combustibles. Administrative control of transient combustibles and Reactor Building tours at the conclusion of each outage prior to unit startup reduce the possibility of a transient fire. Areas between redundant instruments are generally open and have appreciable volume of space available for heat from a fire to dissipate. Fires involving plastic fire resistant cable insulation generally propagate slowly which would allow time for fire brigade response to control a postulated fire. Based on information as outlined above, separation of redundant cable and instruments required for safe shutdown in each Reactor Building is adequate for fire protection. However, Duke requests an exemption to Section III.G.2.d. as the horizontal distance of 20 feet cannot be maintained between safety circuits and non-safety circuits."
1985-02-28 Response to RAI, Additional Information Concerning the 11/11/83 Exemption Requests, 2/28/1985	Exemption Request 4	In Enclosure 1 to the 2/28/1985 DPC letter it adds: "Exemption Request 4 - additional information A detailed description was provided by an April 30, 1981 letter from H. B. Tucker to H. R. Denton and in the November 11, 1983 letter. During a March 29, 1983 meeting in Bethesda, Maryland between Duke and NRC, photographs were reviewed but were not provided. These photographs showed the Standby Shutdown facility (SSF) cable arrangement, location of equipment and cable in the Unit 3 Reactor Building. The photographs reviewed during the March 29, 1983 meeting are attached (Attachment 2). Attachment 3 provides a set of drawings marked to identify the location of the photograph and a brief description of each photograph. Based on the above information and previously provided information, an exemption from the requirements of Appendix R, Section III.G.2.d is appropriate. In particular, this pertains to request for exemption from requirements of Appendix R for: 1. Separation of redundant pressurizer level instruments by less than 20 feet; 2. Separation of redundant systems and equipment needed to achieve hot shutdown condition by 20 feet without intervening combustibles."

Licensing Action

Appendix R Exemption, Reactor Building 20 feet separation w/o intervening combustibles (III.G.2.d criteria)

1989-08-21 NRC SER, Exemption from the Fire Protection Requirements of Section III.G of 10 CFR 50, Appendix R, 8/21/1989	Item 2	In the SER attachment the NRC states: "2. Reactor Buildings - Separation Distance Between Safety Circuits and Non-Safety Circuits Duke requested an exemption from the technical requirements of Section III.G.2.d of Appendix R for two cases where either the distance between redundant instruments is less than 20 feet or where the distance between redundant components necessary for achieving hot shutdown is 20 feet, but intervening combustibles exist between them. In the first case, Duke stated that the pressurizer level transmitter in the Unit 1 reactor building is separated by about 15 feet from the balance of plant instruments although there are no intervening combustibles. In the second case, Duke states that although they are separated by more than 20 feet, the primary and alternate trains of instrumentation have intervening combustibles between them. In evaluating the exemption request, the staff considered the specific configuration of the cases. In the first case, although there are no intervening combustibles between them, the two instruments are separated by only 15 feet. Furthermore, in the rest of the area, the combustible loading, which consists primarily of cable, is low. To reduce the probability of a fire from transient combustibles, Duke has incorporated administrative controls to limit transient combustibles and inspections to detect any combustibles before starting the unit after an outage. Also, reactor buildings are huge structures whose appreciable volume dissipates the heat from a fire. In the second case where the primary and alternate trains of instrumentation, i.e., cables, valves and instruments of the safe shutdown system, are located in two different areas within each reactor building, the trains are separated by more than 20 feet. However, there are also intervening combustibles between them. Although their concentration is low, the intervening combustibles consist of cable trays traversing the reactor building (RB). Because the cable insulation contained within the trays is comparable to IEEE-383 qualified cable, the cable insulation will burn slowly with an initially low rate of heat release. Thus, for the first case of pressurizer level instrumentation, the staff finds that the low combustible loadings and large RB volume provide reasonable assurance that the fire brigade would be able t o extinguish a fire before it develops to the point of preventing a safe plant shutdown. In the second, the distance between redundant and alternate standby shutdown equipment, combined with the low rate of fire propagation through the trays, provides reasonable assurance that the fire brigade will extinguish the fire before it affects redundant trains of instrumentation. Therefore, the staff concludes that Duke's fire protection features within the RB meet the underlying purpose of the rule because they provide an equivalent level of fire protection as would literal compliance with Appendix R."

Licensing Action

Appendix R Exemption, Reactor Building Unrated Containment Mechanical Penetrations (III.G.2.a criteria)

Basis Date: 8/21/1989

Transitioned? Yes

Basis: Exemption request per the 8/14/1984 Duke submittal, as supplemented by the 2/28/1985 Duke letter to the NRC, provides the following justification for the lack of 3-hour fire rated pipe penetrations as required by Section III.G.2.a of Appendix R, which was approved by the NRC in a letter dated 8/21/1989:

- o Reactor building walls serve as a substantial heat sink
- o Combustible loading near penetrations is low
- o Mechanical pipe penetrations are designed to meet multiple containment integrity criteria and are substantial
- o Large room volumes on both sides dissipate heat from a fire away from penetration area.

The bases for acceptability was validated by field walk down in the Penetration Rooms. The Unit 1 Reactor Building was walked down on May 21, 2008. Because of accessibility issues in the Reactor Building during power operations, walkdowns of Units 2 and 3 per PIP-O-08-2006 will be performed when access of a sufficient duration is granted to verify and validate that the exemption bases inside those Reactor Buildings remain as described. In the interim, the existing controls on combustibles, restrictions on containment entry, and containment closeout inspections conducted prior to restart ensure that transient combustible material in the containment has been adequately minimized.

The fixed combustible loading inside the Unit 1 Reactor Building and the Penetration Rooms for all three units near the penetrations was verified to be "low" as described in the exemption request.

In conclusion, the bases for previous acceptance are still valid. Walk downs to verify conditions on the Containment side of these penetrations for Units 2 and 3 will be performed as directed in PIP O-08-2006.

Unit	Fire Area Name	Description
1 2 3	BOP	Balance of Plant
1	RB1	Unit 1 Reactor Building
2	RB2	Unit 2 Reactor Building
3	RB3	Unit 3 Reactor Building
1	WP1	Unit 1 West Penetration Room
2	WP2	Unit 2 West Penetration Room
3	WP3	Unit 3 West Penetration Room

Fire Zone Name	Description
102	Unit 2 West Penetration Room
103	Unit 2 East Penetration Room
107	Unit 1 West Penetration Room
108	Unit 1 East Penetration Room
122	Unit 1 Reactor Building - Basement thru 4th Floor
123	Unit 2 Reactor Building - Basement thru 4th Floor
124	Unit 3 Reactor Building - Basement thru 4th Floor
98	Unit 3 West Penetration Room
99	Unit 3 East Penetration Room

Reference Document	Doc. Detail	Evaluation

Licensing Action

Appendix R Exemption, Reactor Building Unrated Containment Mechanical Penetrations (III.G.2.a criteria)

1984-08-14 Exemption Request, Less than 20' horizontal separation, Piping Penetrations, Pen Rooms, Mechanical Pipe Penetrations in RB, 8/14/1984	Exemption 3	In the attachment to the 8/14/1984 DPC letter it states: "3. Mechanical pipe penetration in Reactor Building walls which serve as part of the containment isolation system are not approved three-hour fire rated assemblies. As shown in FSAR Figure 3.8-2, cold water penetrations (i.e., process fluids at less than 150℉) consist of process pipe penetrating a sleeved opening with a steel housing assemble; anchored into the Reactor Building wall with a pipe closely fitted to the pipe to assure containment integrity. Hot penetrations (i.e., process fluids at more than 150℉) are similar to cold pene trations but also have insulating material between process pipe and wall sleeve. Containment integrity features preclude transmitting flame and particles of combustion through pipe penetrations. The Reactor Building wall is three feet nine inches thick. Heat from a fire in either one of the penetration rooms or in the Reactor Building would mix throughout the volume of the area rather than being concentrated at penetration assemblies. The mass of concrete in Reactor Building walls would serve as a heat sink to further mitigate heat transfer between penetration rooms and Reactor Building. Spare penetrations in the Reactor Building walls are sealed with a pipe cap welded to the Auxiliary Building side of the wall. This arrangement serves to instigate heat transfer as described above for the process pipe penetrations. Considering the above, the existing arrangement is adequate for fire protection of redundant trains of cables in the east and west penetration rooms, in that a fire will not propagate between the east and west penetration rooms through the mechanical pipe penetrations and spare sleeves in the Reactor Building walls. In as much as this configuration has not been explicitly accepted and it is not a three-hour fire barrier, Duke requests an exemption."
1985-02-28 Response to RAI, Additional Information Concerning the 11/11/83 Exemption Requests, 2/28/1985	Enclosure 2 - Exemption Request 3	In Enclosure 2 to the 2/28/1985 DPC letter it states: "Mechanical pipe penetrations in the Reactor Building walls which serve as part of the containment isolation system are not approved three hour fire rated assemblies. As shown in Final Safety Analysis Report (FSAR) Figure 3.8-2, cold water penetration (i.e., processed fluids less than 150℉) consist of processed pipe penetrating a slee ve opening, with a steel housing assembly anchored into the Reactor Building wall, with a pipe cap closely fitted to the pipe to ensure containment integrity. Hot penetrations (i.e., process fluids at more than 150℉) are similar to cold penetrations, but also have insulating material between process pipe and the wall sleeve. Containment integrity features preclude transmitting flame and particles of combustion through pipe penetrations. Each of these penetration seals consist of a steel sleeve with either insulation or dead air space between the pipe and the sleeve, both of which resist heat transfer across the assembly. Heat from a potential fire which could conceivably be transmitted across the Reactor Building wall through the steel pipe sleeve would be restricted by the small cross-sectional area of the steel and mass of concrete in the Reactor Building wall (3 feet, 9 inches thick) which would serve as a heat sink to draw heat from the steel pipe sleeve. This insulation/heat sink effect would minimize heat transfer between Penetration room and the Reactor Building. Furthermore, heat from the fire in either one of the Penetration rooms or in the Reactor Building would mix throughout the volume of the area rather than concentrating at penetration assemblies. The spare penetrations in the Reactor Building wall are sealed with pipe cap welding through the Auxiliary Building side of the wall. This arrangement serves to mitigate heat transfer as described above for the process pipe penetrations. Considering the above, the existing arrangement is adequate for fire protection of redundant trains of cables in the East and West Penetration rooms, in that a fire would not propagate between the East and West Penetrations rooms through the mechanical pipe penetration and spare sleeves in the Reactor Building walls. However, an exemption from requirements of Appendix R, Section III.G.2.a for an approved three hour fire rated assembly is required."

Licensing Action

Appendix R Exemption, Reactor Building Unrated Containment Mechanical Penetrations (III.G.2.a criteria)

1989-08-21 NRC SER, Exemption from the Fire Protection Requirements of Section III.G of 10 CFR 50, Appendix R, 8/21/1989	Item 5	In the SER attachment the NRC states: "5. Reactor Building Walls Duke requested an exemption from the technical requirements of Section III.G.2.a of Appendix R to the extent that three-hour, fire-rated pipe penetrations are not provided within the reactor building wall contiguous to the penetration rooms. Duke has stated that the mechanical pipe penetrations in the reactor building walls are not fire rated. The reactor building walls serve as fire barriers separating redundant trains of cables in the east and west penetration rooms. Because of the presence of these unrated penetrations, the reactor building walls do not conform with the technical requirements of Section III.G.2.a of Appendix R to 10 CFR Part 50. The containment penetration design for pipe containing less than 150°F process fluids consists of a sleeved opening with a steel housing assembly anchored to the reactor building wall, with a pipe cap attached to the pipe for containment integrity. Penetrations for higher temperature process piping are similar in design but have insulation between the process pipe and the wall sleeve. The mechanical pipe penetration design was observed during the plant Appendix R inspection during the week of January 26-30, 1987, to be similar to penetration designs used at other facilities. The penetrations have been designed to meet multiple containment integrity criteria. The combustible loadings near the penetration are low; therefore, a fire of significant magnitude or duration should not occur near the penetrations. If a fire does occur, it is probable that the substantial construction of the piping penetrations, combined with the large room volumes on either side of the penetrations, will prevent fire propagation through the containment boundary. It is, therefore, concluded that the existing unrated containment mechanical pipe penetrations provide reasonable assurance that a fire will not propagate through the barrier and are, therefore, an acceptable deviation from the technical requirements of Section III.G.2.a of Appendix R. Based on the above evaluation, the existing mechanical pipe penetrations in the reactor building walls provide a level of fire protection equivalent to the technical requirements of Section III.G.2.a of Appendix R and provide reasonable assurance that the fire will not propagate through the containment boundaries."

Licensing Action

Appendix R Exemption, SSF, Lack of instrumentation per III.L.2

Basis Date: 8/31/1983

Transitioned? Yes

Basis: Exemption request per the 7/15/1983 Duke submittal, as supplemented by the1/25/1982 Duke Letter to the NRC, provides the following justification for the lack source range flux monitoring and steam generator pressure instrumentation required by App. R, Section III.L.2, which was approved by the NRC in a letter dated 8/31/1983:

The lack of source range monitoring is acceptable because:
- o Unit held at hot standby.
- o Control rods are inserted.
- o RCS makeup and boration is with spent fuel pool water as this is the only source available with the existing piping design.

The lack of steam generator pressure instrumentation is acceptable because:
- o Steam pressure is not a control parameter for operators.
- o Steam generator level will be used to control auxiliary feedwater flow.

In conclusion, the bases for previous acceptance are still valid as substantiated by EIR 51-5044354-002.

Unit	Fire Area Name	Description
1 2 3	BH12	Unit 1 & 2 Block House
1 2 3	BH3	Unit 3 Block House
1 2 3	BOP	Balance of Plant

Fire Zone Name	Description
SSF	Standby Shutdown Facility

Reference Document	Doc. Detail	Evaluation
1982-01-25 Response to RAI, Source Range and Steam Generator Pressure Instrumentation, 1/25/1982		In the 1/25/1982 DPC letter it states: "Duke Power considers that neither source range flux monitoring nor steam generator pressure instrumentation need be provided in the SSF to assure safe shutdown in the event of fire. Source range neutron flux is only required where there is a potential for positive reactivity addition. The following reasons constitute why we conclude that this instrumentation is not required: a) Unit is to be held at hot standby. b) Control rods are inserted. c) RCS makeup and boration (2000 ppm) is with spent fuel pool water. This is the only source available with the existing piping design. As such, inadvertent boron dilution during operation of the SSF is not possible. Steam generator pressure is not a control parameter (i.e., the operator does not take action or attempt to control based on this information only). Steam generator level will be used to control auxiliary feedwater flow."
1983-07-15 Exemption Request, Nuclear Instrumentation and SG Pressure, 7/15/1983		In the 7/15/1983 DPC letter it states: "The NRC position, as conveyed to Duke in the SSF SER, was that source range, flux monitoring and steam generator pressure indication were required to meet these requirements. Duke held an appeal meeting with the NRC on June 8, 1983 at which time Duke presented the bases for its position that such instrumentation was not required. The Staff listened to the Duke discussion and concluded that, due to the unique Oconee SSF design, source range monitors and steam generator pressure indication would not be required, but that an exemption to the rule would be necessary. Duke maintains that the existing SSF design meets the requirements and is in full compliance with the regulation. Nevertheless, in accordance with the Staff request, and in consideration of the desire to resolve this in a timely manner, Duke hereby requests an exemption."

Licensing Action

Appendix R Exemption, SSF, Lack of instrumentation per III.L.2

1983-08-31 NRC SER, Nuclear Instrumentation and SG Pressure, 8/31/1983	In the SER attachment the NRC states: "A. Steam Generator Pressure The licensee has stated that controlled reactor coolant system (RCS) heat removal for hot shutdown can be directly monitored by RCS parameters and controlled by SG level without SG pressure indication, provided that SG pressure is regulated. SG pressure is to be regulated by the main steam code safety valves, which will relieve at their setpoints. RCS conditions can be monitored by primary coolant temperature and pressure, pressurizer level and SG level. Should RCS overcooling occur, corrective actions can be taken from the SSF to reinstate proper cooling which include regaining correct SG level in order to restore Tcold. The SSF is designed to achieve and maintain a hot shutdown condition for one or more of the three Oconee units. The SSF is not designed to bring the reactor from hot shutdown to cold shutdown. Cold shutdown will be achieved and maintained through the use of existing plant systems and equipment. B. Source Range Flux Monitor The licensee has stated that the SSF is designed to achieve and maintain hot shutdown conditions for any or all of the Oconee units. Prior to leaving the Unit 1/2 or Unit 3 control room, all control rods for the unit under consideration are required to be inserted. Further, when control is transferred to the SSF, deboration is automatically terminated. No nonborated sources tie into the SSF makeup/boration flow path. RCS makeup and boration (2000 ppm) following transfer to the SSF is from the spent fuel pool. Thus, boron dilution events are highly unlikely. C. Conclusions Based on our evaluation of the licensee's presentation and our review of the subject material, we conclude that Oconee Units 1, 2, and 3 can achieve and maintain controlled cooling to hot shutdown conditions safely from the SSF without the need for remote SG pressure instrumentation, and, thus, this instrumentation for the Oconee Nuclear Station is not required. We further conclude that a safe and stable plant hot shutdown condition can be achieved and maintained from the SSF without the use of a remote SRM, and, thus, this instrumentation for the Oconee Nuclear Station is likewise not required. The NRC staff agrees with the licensee's assessment that adequate instrumentation is available for controlled heat removal from the RCS without indication of SG pressure. The staff further agrees with the assessment that, since boron dilution is highly unlikely when control is transferred to the SSF, the remote SRM is not necessary. Therefore, the NRC staff considers that the objectives of Sections III.G.3 and III.L.2 of Appendix R to 10 CFR Part 50 are met and the licensee's request to be exempted from the requirement to provide remote SRM and SG pressure instrumentation in the SSF should be granted."
EIR 51-5044354-002, OCONEE APPENDIX R FIRE SAFE SHUTDOWN ANALYSIS , Rev. 2, 4/7/2008	This EIR documents the methodolgy and results of the ONS Appendix R Fire Safe Shutdown Analysis.

Licensing Action

Approval of Safe Shutdown System (SSS) Design

Basis Date: 4/28/1983

Transitioned? Yes

Basis: NRC provided a Safety Evaluation of the SSS design by letter dated April 28, 1983 stating the Oconee SSF design was to resolve the safe shutdown requirements for fire protection (Appendix R to 10 CFR 50, Sections III.G.3 and III.L). The safety evaluation states that the SSF design meets the appropriate requirements with the exception of process monitoring instruments for source range flux monitoring and steam generator pressure indication. Exemptions were granted for the cited instrumentation and discussed in the licensing action evaluation titled Appendix R Exemption, SSF, Lack of instrumentation per III.L.2.

The initial submittal of the SSF design was dated February 1, 1978 following a series of meetings with the NRC and provided a conceptual discussion of the design and its capabilities. The main design features of note were the capability to maintain a hot shutdown condition in all units without any damage control measures and the ability to withstand safe shutdown earthquake seismic loadings. The design was further described to utilize natural circulation to remove decay heat from the primary coolant, use of secondary side steam valves to the atmosphere as a heat sink, and providing an independent power system.

In the submittal dated June 19, 1978 additional information regarding the conceptual design of the SSF was provided to the NRC based on a series of questions asked by the NRC in a letter dated May 18, 1978 about particular design details such as repair procedures for cold shutdown, applicability of single failure criterion, ASME code applicability, flood prevention, applicability of the Standard Review Plan, NUREG 75/087, boron addition and reactivity control, RC makeup capabilities, testing, RCP seal leakage, NPSH calculations, natural circulation flows and RCS cooldown behavior.

In the submittal dated March 28, 1980, Oconee provided the detailed design specifications for the SSF that incorporated the previous responses to the NRC for their approval. By letter dated October 27, 1980, the NRC asked additional questions which were responded to in a letter dated February 16, 1981 regarding ASME code and SRP applicability. Additional answers to these questions were provided in letters dated March 31, 1981 and April 13, 1981.

The NRC asked more questions regarding SSF design specifics related to application of NUREG-75/087, Class 1E electrical power system requirements, adequacy of RC makeup pump capacity, response to spurious valve operation, physical and electrical independency and other clarifications of previously asked and answered questions as well as requesting drawings and other design documents. One of the most critical of these questions is in regard to the spurious operation of valves. The response letter dated September 20, 1982 established that the design of the SSF was to assume a period of 10 minutes would be available to mitigate potential spurious operations from the Control Room allowing operators time to activate the SSF. In a letter dated December 23, 1982, Oconee provided further information on the power supplies and control circuits of the specific valves in question.

In conclusion, the NRC approved the design of the SSF in the SER dated April 28, 1983.

Unit	Fire Area Name	Description
1 2 3	BH12	Unit 1 & 2 Block House
1 2 3	BH3	Unit 3 Block House
1 2 3	BOP	Balance of Plant

Fire Zone Name	Description
SSF	Standby Shutdown Facility

Reference Document	Doc. Detail	Evaluation

Licensing Action

Approval of Safe Shutdown System (SSS) Design

1978-02-01, Proposed SSF system for Oconee, 2/1/1978	"1.2 SYSTEM CONCEPT Safe shutdown capability is achieved by: 1.2.1 Maintaining adequate primary system volume (see section 2) 1.2.2 Maintaining adequate secondary side volume (see section 3) 1.2.3 Utilizing primary side natural circulation to remove decay heat. The Oconee Reactor Colant System is capable of providing adequate natural circulation flow for core heat removal in the event of of a loss of normal station power. Following loss of normal power to the reactor coolant pumps, the reactor trips and the pumps coastdown. The core heat generation is due to decay heat, which decreases with time. Figure 1.2-1 shows the flow required for core heat removal as a function of time after loss of power. The available natural circulation flow has been calculated using the assumption that the auxiliary feedwater flow is available to maintain a steam generator level of approximately 50%. Two cases have been analyzed--one corresponding to worst case primary to secondary heat transfer (minimum expected flow) and the other corresponding to the more likely conditions of primary to secondary heat transfer (maximum expected flow). The minimum expected natural circulation flow was calculated under the assumption that the steam generator secondary side is an isothermal heat sink at the saturation temperature corresponding to the lowest safety relief valve setpoint with no auxiliary feedwater flow entering the steam generator and no steam flow. The maximum expected natural circulation flow was developed by considering the reduction in the primary coolant temperature associated with the auxiliary feedwater flow. The values of minimum to maximum expected flow are also shown in Figure 1.2-1 as a function of time after loss of power. Natural circulation flow tests have been performed on Oconee Unit 1 to demonstrate the natural circulation flow capability of the Oconee RCS design. These tests involved the transit time measurement of an induced temperature transient. The average of two measurements, shown in Figure 1.2-1, is greater than the maximum and minumum flow values for the same conditions and provides considerable margin to the required flow. Therefore, the measured data and the calculated values of available natural circulation flow fully demonstrate that the core heat can be adequately removed by natural circulation flow. 1.2.4 Utilizing the atmosphere as a heat sink via the secondary side steam valves. 1.2.5 Providing sufficient instrumentation (OSTG level, pressurizer level, pump status, diesel generator status, etc.) and controls (pumps, diesel generator, necessary valves inside containment, etc.) to allow operator initiation and control of the orderly progression of each unit to hot shutdown conditions. 1.2.6 Providing other services such as HVAC, lighting and communications for the structure housing the system (see section 1.3) 1.2.7 Providing an independent power system to support the above (see section 4) "
1978-06-19, Response to RAI on SSF Conceptual Design, 6/19/1978	In a submittal dated June 19, 1978 additional information regarding the conceptual design of the SSF was provided to the NRC based on a series of questions asked by the NRC in a letter dated May 18, 1978 about particular design details such as repair procedures for cold shutdown, applicability of single failure criterion, ASME code applicability, flood prevention, applicability of the Standard Review Plan, NUREG 75/087, boron addition and reactivity control, RC makeup capabilities, testing, RCP seal leakage, NPSH calculations, natural circulation flows and RCS cooldown behavior.

Licensing Action

Approval of Safe Shutdown System (SSS) Design

1980-03-28, Submittal of SSF Detailed Design Information, 3/28/1980	The SSF is designed to mitigate the consequences of postulated fire or flooding incidents or acts of industrial sabotage to one or more of the three units at Oconee. The SSF contains, within seismically designed structures, a reactor coolant volume control system for maintenance of primary system coolant during hot shutdown conditions; a steam generator volume control system for secondary system heat removal capabilities; independent emergency sources of AC and DC electrical power and associated electrical distribution systems; and various support systems. The SSF is designed to provide an alternate and independent means to achieve and maintain hot shutdown conditions for one or more of the three Oconee units. The SSF is in addition to and supplements the current shutdown capability described in the Oconee FSAR. It would be operated only in the event installed normal and emergency systems are inoperable. Manual operator action is required to actuate the system. "
1981-02-16, RAI Response on SSF, 2/16/1981	This letter provides response to additional questions asked by the NRC in their letter dated October 27, 1980 regarding ASME code and SRP applicability.
1981-03-31, RAI Response on SSF, 3/31/1981	By letter dated October 27, 1980, the NRC asked additional questions which were responded to in a letter dated February 16, 1978 regarding ASME code and SRP applicability. Additional answers to these questions were commited and provided in this submittal.
1981-04-13, RAI Response on SSF, 4/13/1981	This letter provided additional response to questions asked previously by the NRC in their letter dated October 27, 1980.
1982-07-17, RAI on SSF Design Capability, 7/17/1982	The NRC asked more questions regarding SSF design specifics related to application of NUREG-75/087, Class 1E electrical power system requirements, adequacy of RC makeup pump capacity, response to spurious valve operation, physical and electrical independency and other clarifications of previously asked and answered questions as well as requesting drawings and other design documents. One of the most critical of these questions is in regard to the spurious operation of valves. "The criteria we are using in our review are: 1. The SSF should be designed to meet seismic Category I requirements since the Auxiliary Service Water System in the SSF is relied upon to backup the emergency feedwater system in the event of a design basis earthquake. 2. The SSF need not meet single failure or other design basis accident criteria, except where required for other reason, e.g. because of interface with or impact on existing safety systems, or because of adverse valve actions due to fire damage. 3. Additional requirements for the SSF flow from the proceeding two criteria, e.g. the facility components should be environmentally qualified for conditions to which they may be exposed. As a result of our review, we have a number of unresolved concerns."

Licensing Action

Approval of Safe Shutdown System (SSS) Design

1982-09-20, RAI Response on SSF Design, 9/20/1982	This response letter established that the design of the SSF was to assume a period of 10 minutes would be available to mitigate potential spurious operations from the Control Room allowing operators time to activate the SSF. "In the cover letter of the last request for information, the Staff listed the criteria used in their review. With respect to this, Duke provides the following: 1. The SSF is designed to meet Seismic Category I requirements in order for the Auxiliary Service Water System in the SSF to be used as a backup for the emergency feedwater system in the event of a design basis earthquake. 2. The only interfaces between the SSF and the existing plant are the interconnection of the power and control "swap over" for the selected valves and the piping tie to the Auxiliary Service Water System. Since the SSF and the existing plant are essentially independent of one another, no SSF failure will result in consequences more severe than those analyzed in the FSAR. In summary, the SSF has been designed and constructed in accordance with the original design concept that was approved by the NRC and is consistent with the current regulations. As such, no additional requirements for the SSF are deemed appropriate, nor are any considered necessary."
1982-12-23, RAI Response on SSF design capability, 12/23/1982	In this letter dated December 23, 1982, Oconee provided further information on the power supplies and control circuits of the specific valves in question. This is in continuance to questions asked by the NRC in their letter dated July 17, 1982.
1983-04-28, Safety Evaluation of SSF, 4/28/1983	NRC provided a Safety Evaluation of the SSF design stating that the Oconee SSF design was to resolve the safe shutdown requirements for fire protection (Appendix R to 10 CFR 50, Sections III.G.3 and III.L). The safety evaluation states that the SSF design meets the appropriate requirements (including the 72 hour requirement) with the exception of process monitoring instruments for source range flux monitoring and steam generator pressure indication. Exemptions were granted for the cited instrumentation and discussed in other licensing action evaluations.

L. NFPA 805 Chapter 3 Requirements for Approval

2 Pages Attached

Approval Request 1

NFPA 805 Section 3.3.1.2(1)

NFPA 805 Section 3.3.1.2(1) states:

> *"Wood used within the power block shall be listed pressure-impregnated or coated with a listed fire-retardant application.*
>
> *Exception: Cribbing timbers 6 in. by 6 in. (15.2 cm by 15.2 cm) or larger shall not be required to be fire-retardant treated."*

Duke Nuclear System Directive entitled "Control of Flammable and Combustible Materials" requires only fire retardant wood be used within the power production and safe shutdown areas unless approval is obtained from the FPE. Three exceptions are allowed; dunnage (large timbers) for specific work activities, concrete forming, and where specified on design documents.

NRC approval is requested for the use of non-treated wood for concrete forming and where specified on design documents.

Basis for Request:

ONS provides the following justification for this request:

- In some cases, the chemicals used in the treatment of fire-retardant wood affect concrete curing. Small quantities of non-treated wood used for concrete forming is acceptable because the magnitude of the additive combustible material would be insignificant as compared to the total fire load in the area. In addition, locations of concrete forming are generally not in close proximity to ignition sources.
- Permanent installation of non-treated wood is subject to the modification process and would be specified on design documents. The modification process requires FPE review and approval.

Approval Request 2

NFPA 805 Section 3.3.1.3.4

NFPA 805 Section 3.3.1.3.4 states:

> *"Plant administrative procedure shall control the use of portable electrical heaters in the plant. Portable fuel-fired heaters shall not be permitted in plant areas containing equipment important to nuclear safety or where there is a potential for radiological releases resulting from a fire."*

The use of portable heating devices is controlled by Nuclear Site Directive entitled "Fire Protection and Impairment Surveillance." The Directive defines a heating device as "*A temporary heater that uses greater than or equal to 220 Volts or is powered by a fossil fuel source and is used to heat a general area, enclosure or equipment.*" Site personnel are responsible for notifying the FPE of any intended use of a heating device(s).

ONS Site Directive entitled "Fire Protection Program Compensatory Measures Process" provides a flow chart for measures to take when temporary heaters are installed. This includes consideration of location and risk. The group that requests the placement of the temporary heating device shall be responsible to ensure that fire watches are initiated. A passive fire watch shall be conducted at least once every six (6) hours but may be more frequent if determined by the FPE. Fire watches shall be documented by use of the Impairment and Compensatory Measures (ICM) Form.

A Nuclear Site Directive specifies only steam heaters, UL Listed or FM Approved electric heaters, gas (MAPP, LPG, or natural) or oil-fired heaters shall be allowed inside buildings. Gasoline and other fuels are not permitted unless approved by the FPE.

NRC approval is requested for the use of temporary fossil fuel heaters as specified in the Nuclear Site Directive entitled "Fire Protection and Impairment Surveillance", and Site Directive entitled "Fire Protection Program Compensatory Measures Process".

Basis for Request:

ONS provides the following justification for this request:

- Site personnel are responsible for notifying the FPE of any intended use of > 220V and fossil fuel heating devices.
- ONS Site Directive "Fire Protection Program Compensatory Measures Process" provides a flow chart for compensatory measures to take when temporary heaters are installed. This includes consideration of location and risk.
- The group that requests the placement of the temporary heating device is responsible to ensure that appropriate compensatory measures are performed.

M. License Condition Changes

2 Pages Attached

Replace the current ONS fire protection license condition 3.D with the standard license condition in Regulatory Position C.3.1 of RG 1.205, Revision 0, as modified by Frequently Asked Question (FAQ) 06-0008, as shown below. In support of this change, ONS has developed a fire Probabilistic Risk Assessment (PRA) which has been reviewed by the NRC during the course of its assessment performed the week of March 17, 2008 of the ONS transition to NFPA 805 as a Pilot Plant. The NRC's preliminary results of the assessment were issued in a report dated April 10, 2008. Outstanding high level findings from the NRC's pilot observations of the Fire PRA are included in section 4.5.1.2 of the Transition Report.

==========

Duke Energy Carolinas, LLC shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c) as specified in safety evaluation report dated April 28, 1983 and in the license amendment request dated May 30, 2008, and supplemented on [Date to be Determined], as approved in the safety evaluation report dated _____ (and supplements dated _____). The licensee may make changes to the fire protection program without prior approval of the Commission if those changes satisfy the provisions set forth in 10 CFR 50.48(a), 10 CFR 50.48(c), and the following:

(a) Prior NRC review and approval is not required for a change that results in a net decrease in risk for both CDF and LERF. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. The change may be implemented following completion of the change evaluation. Change reports need not be submitted to the NRC for these changes.

(b) Prior NRC review and approval is not required if the change results in a net calculated risk increase less than 1E-7/yr for CDF and less than 1E-8/yr for LERF. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. The change may be implemented following completion of the change evaluation. Change reports need not be submitted to the NRC for these changes.

(c) Where the calculated plant change risk increase is < 1E-6/yr, but ≥1E-7/yr for CDF or < 1E-7/yr, but ≥1E-8/yr for LERF, the licensee must submit a summary description of the change to the NRC following completion of the change evaluation. The proposed change also must be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. If the NRC does not object to the change within 90 days, the licensee may proceed with implementation of the proposed change.

Duke Energy Carolinas, LLC may perform Change Evaluations for deviations from the codes, standards, and listings referenced in NFPA 805, without a 10 CFR 50.90 submittal, as long as the specific requirement for the feature is not included in NFPA 805 Chapter 3, and the NFPA 805 change process is used.

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License condition 3.D shall be superseded with the exception of the SER dated April 28, 1983:

> *"3.D. Fire Protection Program*
>
> *Duke Energy Carolinas, LLC shall implement and maintain in effect all provisions of the approved fire protection program as described in the UFSAR for the facility and as approved in the SER's dated August 11, 1978, and April 28, 1983; October 5, 1978, and June 9, 1981 Supplements to the SER dated August 11, 1978; and Exemptions dated February 2, 1982; August 31, 1983; December 27, 1984; December 5, 1988; and August 21, 1989 subject to the following provision:*
>
> *The licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire."*

It is Duke's understanding that implicit in the revocation of this license condition, all prior Fire Protection Program SERs and commitments (with the exception of the SER dated April 28, 1983) have been superseded in their entirety by the revised license condition.

No other license conditions need to be revised or superseded.

ONS implemented the following process for determining that these are the only license conditions required to be either revised or superseded to implement the new fire protection program which meets the requirements in 10 CFR 50.48(a) and 50.48(c):

- A review was conducted of the ONS Facility Operating License DPR-38, DPR-47, and DPR-55, by ONS licensing staff and NFPA 805 Transition Team. The review was performed by reading the Operating License and performing electronic searches. Outstanding License Amendment Requests that have been submitted to the NRC were also reviewed for potential impact on the license conditions.

N. Technical Specification Changes

1 Page Attached

Delete the following Technical Specification:

- Section 5.4.1 Written procedures shall be established, implemented, and maintained covering the following activities:

  d. Fire Protection Program implementation

Revise the following Technical Specification Bases:

- Technical Specification 3.10.1, Standby Shutdown Facility (SSF) need to remain as is to ensure the functional capability and availability of the facility as credited in the fire protection and other programs. However, the bases shall be revised to delete the reference to 10 CFR50 Appendix R since it will no longer apply.

No other Technical Specifications need to be revised or deleted.

ONS implemented the following process for determining that these are the only Technical Specifications required to be revised or deleted to implement the new fire protection program which meets the requirements in 10 CFR 50.48(a) and 50.48(c).

- A review was conducted of the ONS Technical Specifications, by Duke licensing and NFPA 805 Transition Team. The review was performed by reading the Technical Specifications and performing electronic searches. Outstanding Technical Specification changes that have been submitted to the NRC were also reviewed for potential impact on the license conditions.

ONS determined that these changes to the Technical Specifications and the associated bases are adequate for adoption of the new fire protection LB, for the following reasons.

- The requirement for establishing, implementing, and maintaining fire protection procedures is contained in the regulation (10 CFR 50.48(a) and 50.48(c) NFPA 805 Chapter 3).
- 10 CFR 50.48(b) Appendix R requirements will be superseded by 10 CFR 50.48(a) and 50.48(c).

O. Orders and Exemptions

1 Page Attached

Exemptions

Supersede the following exemptions granted against 10 CFR 50 Appendix R dated February 2, 1982; August 31, 1983; December 27, 1984; and August 21, 1989.

- Auxiliary Building Lack of 3-hour fire rated Barrier (August 21, 1989)
- Auxiliary Building Lack of 3-hour fire rated penetration seals (August 21, 1989)
- Auxiliary Building Non-rated Expansion Joints (August 21, 1989)
- Lack of Control Room Suppression (February 2, 1982)
- Outside and SSF Emergency Lighting (December 27, 1984)
- Reactor Building 20 feet Separation without Intervening Combustibles (August 21, 1989)
- Reactor Building Unrated Containment Mechanical Penetrations (August 21, 1989)
- SSF Lack of Instrumentation per III.L.2 (August 31, 1983)

Specific details regarding these exemptions are contained in Attachment K. The exemptions and their bases will be transitioned to the new LB under 10 CFR 50.48(a) and 50.48(c) as previously approved variances from the deterministic Nuclear Safety Performance Criteria (NFPA 805 Figure 2-2) and therefore compliant with the new regulation. No plant Change Evaluations will be required to accept these variances since they are part of the baseline Fire Protection Program.

Orders

No Orders need to be superseded or revised. ONS implemented the following process for making this determination:

- A review was conducted of the ONS docketed correspondence by ONS licensing staff. The review was performed by reviewing the correspondence files and performing electronic searches of internal ONS records and the NRC's ADAMS document system.

A specific review was performed of the license amendment that incorporated the mitigation strategies required by Section B.5.b of Commission Order EA-02-026 (TAC No's MD4712, MD4713, and MD4714) to ensure that any changes being made to ensure compliance with 10 CFR 50.48(c) do not invalidate existing commitments applicable to the plant. The review of this order demonstrated that changes to the fire protection program will not affect measures required by B.5.b.

P. Performance-Based Methods 10 CFR 50.48(c)(2)(vii)

6 Pages Attached

In accordance with 10 CFR 50.48(c)(2)(vii), Duke requests approval for the use of RI-PB methods for specific sections of NFPA 805 Chapter 3. This method is based upon the process developed under FAQ 06-0008, Revision 8 (ML073370025).

Method:

All fire protection systems and features required by NFPA 805 Chapter 3 will continue to be required (unless specifically addressed separately from this process in an LAR). Secondary features (See the following table) may be changed based on an evaluation, using the required methods in a similar manner that was previously allowed under the Generic Letter 86-10 license condition, without prior NRC approval.

Specifically, the method applies to sections of NFPA 805 Chapter 3 containing referenced codes, standards, and listings. Note the method applies to the secondary features of the referenced codes, standards, and listings contained within these sections, and the process cannot be used to change the NFPA 805 Chapter 3 specific requirements.

Each individual change will be evaluated using the NFPA 805 change process (NFPA 805 performance goals/objectives/criteria, defense-in-depth and safety margins evaluation).

Certain fire protection systems and features have performance requirements that are conditional upon NFPA 805 Chapter 4 requirements. These systems and features are:

- Fire Alarm and Detection Systems [NFPA 805 Section 3.8]
- Automatic and Manual Water-Based Fire Suppression Systems [NFPA 805 Section 3.9]
- Gaseous Fire Suppression Systems [NFPA 805 Section 3.10]
- Passive Fire Protection Features [NFPA 805 Section 3.11]

For these systems and features, the performance requirements are established by the deterministic and/or performance-based analyses used in demonstrating how the NFPA 805 Chapter 4 performance criteria are met. Fire Protection Engineering Analyses may be used to demonstrate how these systems and features meet the NFPA 805 Chapter 4 criteria (e.g., coverage/performance of a detection/suppression system, ability of fire barriers to withstand expected fire hazards, etc.). These Fire Protection Engineering Analyses, however, are allowed under 10 CFR 50.48(c) and do not require specific permission under 10 CFR 50.48(c)(2)(vii), Performance-Based Methods.

This method does not apply to NFPA 805 Chapter 3 changes that do not relate to referenced codes, standards, or listings. These types of changes continue to require individual 10 CFR 50.90 license amendment requests addressing the specific deviation.

The following provides the sections of NFPA 805 that will utilize this method.

Column Heading Definition:

Fire Protection Engineering Analysis Process Applicable: Sections of NFPA 805 Chapter 3 containing referenced codes and listings. Note the "Applicability" would only apply to the referenced codes, standards, and listings contained within these sections, and the process could not be used to change the NFPA 805 Chapter 3 specific requirements.

Fire Protection Engineering Analysis Process Not Applicable: These NFPA 805 Chapter 3 sections do not have referenced codes, standards, or listings. Therefore, the method associated with this FAQ is not applicable and would be outside the scope of the associated LAR.

Conclusion:

The use of the described method will ensure that the following requirements of 10 CFR 50.48(c)(2)(vii) are met:

P-1 10 CFR 50.48(c)(2)(vii) Method of Accomplishment

10 CFR 50.48(c)(2)(vii) Requirement	Method of Accomplishment
(a) The required NFPA 805 performance goals, performance objectives, and performance criteria are satisfied.	The fire protection engineering analysis process includes the assessment of impact on NFPA 805 performance goals, performance objectives, and performance criteria are satisfied. Impact will be assessed per RI-PB change process in NEI 04-02 Chapter 5 and Appendices I and J and supplemented by RG 1.205, Revision 0, Regulatory Position 3.2.
(b) Safety margins are maintained.	Maintaining safety margins will be ensured using the RI-PB change process in NEI 04-02 Chapter 5 and Appendices I and J and supplemented by RG 1.205, Revision 0, Regulatory Position C.3.2.
(c) Fire protection defense-in-depth is maintained.	Maintaining fire protection defense-in-depth will be ensured using the RI-PB change process in NEI 04-02 Chapter 5 and Appendices I and J and supplemented by RG 1.205 Regulatory Position C.3.2.

Table P-2 Performance-Based Methods – NFPA 805 Chapter 3

Section	Title	FP Eng. Analysis Process Applicable	FP Eng. Analysis Process Not Applicable	Referenced Code/Standard/Listing[4]
3.1	General		X	
3.2	Fire Protection Plan		X	
3.2.1	Intent		X	
3.2.2	Management Policy Direction and Responsibility		X	
3.2.3	Procedures		X	
3.3	Prevention		X	
3.3.1	Fire Prevention for Operational Activities	X		3.3.1.2 (2) NFPA 701 (5) NFPA 30 (6) "applicable NFPA codes and standards" 3.3.1.2.1 NFPA 51B NFPA 241
3.3.2	Structural	X		3.3.2 NFPA 220
3.3.3	Interior Finishes	X		3.3.3 NFPA 101
3.3.4	Insulation Materials		X	
3.3.5	Electrical	X		3.3.5.1 ...electrical wiring shall be listed for plenum use.." (Note 1)
3.3.6	Roofs	X		NFPA 256
3.3.7	Bulk Flammable Gas Storage	X		3.3.7.1 NFPA 50A

Table P-2 Performance-Based Methods – NFPA 805 Chapter 3

Section	Title	FP Eng. Analysis Process Applicable	FP Eng. Analysis Process Not Applicable	Referenced Code/Standard/Listing[4]
3.3.8	Bulk Storage of Flammable and Combustible Liquids	X		NFPA 30
3.3.9	Transformers		X	
3.3.10	Hot Pipes and Surfaces		X	
3.3.11	Electrical Equipment		X	
3.3.12	Reactor Coolant Pumps		X	
3.4	Industrial Fire Brigade	See sub-sections		
3.4.1	On-Site Fire Fighting Capability	X		(a)(1), (2), and (3) NFPA 600 NFPA 1500 NFPA 1582
3.4.2	Pre-Fire Plans		X	
3.4.3	Training and Drills	X		(a)(1) NFPA 600 NFPA 1500
3.4.4	Fire Fighting Equipment	X		"....with the applicable NFPA standards."
3.4.5	Off-Site Fire Department Interface		X	
3.4.6	Communications		X	

Table P-2 Performance-Based Methods – NFPA 805 Chapter 3

Section	Title	FP Eng. Analysis Process Applicable	FP Eng. Analysis Process Not Applicable	Referenced Code/Standard/Listing[4]
3.5	Water Supply	X		3.5.1(b) NFPA 13 NFPA 15 3.5.2 NFPA 22 3.5.3 NFPA 20 3.5.10 NFPA 24 3.5.13 ANSI B31.1 3.5.15 NFPA 24
3.6	Standpipe and Hose Stations	X		3.5.1 NFPA 14 3.5.3 "Listed electrically safe fixed fog nozzles…"
3.7	Fire Extinguishers	X		NFPA 10
3.8	Fire Alarm and Detection Systems	See sub-sections		
3.8.1	Fire Alarm	X		NFPA 72
3.8.2	Detection	X		NFPA 72
3.9	Automatic and Manual Water-Based Fire Suppression Systems	X		3.9.1 NFPA 13 NFPA 15 NFPA 750 NFPA 16
3.10.	Gaseous Fire Suppression Systems	X		3.10.1 NFPA 12 NFPA 12A NFPA 2001

Table P-2 Performance-Based Methods – NFPA 805 Chapter 3

Section	Title	FP Eng. Analysis Process Applicable	FP Eng. Analysis Process Not Applicable	Referenced Code/Standard/Listing[4]
3.11	Passive Fire Protection Features	See sub-sections		
3.11.1	Building Separation (Note 2)	X		NFPA 80A
3.11.2	Fire Barriers	X		NFPA 251 ASTM E 119
3.11.3	Fire Barrier Penetrations	X		"…listed fire-rated door assemblies or listed fire rated fire dampers…" (1) NFPA 80 (2) NFPA 90A (3) NFPA 101
3.11.4	Through Penetration Fire Stops	X		"….with a fire test protocol acceptable to the AHJ or be protected by a listed fire-rated device…."
3.11.5	Electrical Raceway Fire Barrier Systems (ERFBS)		X	(Note 3)

Note 1 – Flame propagation tests/standards for electrical cable construction are addressed by FAQ 06-0022 Revision 1 (ML072340055).

Note 2 – Section 3.11.1 of NFPA 805 also contains an exception for performance-based analysis.

Note 3 – Generic Letter 86-10, Supplement 1 is not considered a referenced code, standard, or listing referenced in NFPA 805 for the purposes of this method. However, Section 3.11.5 of NFPA 805 is conditional based on NFPA 805 Chapter 4 and performance-based methods are allowed for this section.

Note 4 – Licensee specific commitments to referenced standards are included in the NEI 04-02 Table B-1 NFPA 805 Chapter 3 Transition Attachment A. For those codes for which a specific commitment does not currently exist, the code year cited in the 2001 edition of NFPA 805 will be used.

Q. RI-PB Alternatives to NFPA 805 10 CFR 50.48(c)(4)

No risk-informed or performance-based alternatives to compliance with NFPA 805 (per 10 CFR 50.48(c)(4)) were utilized by ONS.

R. UFSAR Changes

An example of the content and level of detail of the proposed changes to the Updated Final Safety Analysis Report (UFSAR) necessitated by the license amendment will be included in the supplement to the LAR.

S. Plant Modifications

All of the reviews and analysis necessary to support transition have not been completed. Specifically, the Fire PRA for ONS Units 1, 2, and 3 to support the RI-PB Change Evaluations per Regulatory Positions C.2.2 and C.4.3 of RG 1.205 has not been completed. Therefore, Fire PRA results and the associated Change Evaluations have not been completed. Completion of these tasks is scheduled to be submitted to the NRC in the supplement to the LAR.

T. Clarification of Prior NRC Approvals

13 Pages Attached

Introduction

The elements of the ONS current fire protection LB for which specific NRC previous approval is uncertain are identified in the following sections. Also provided in the following sections is sufficient detail to demonstrate how those elements of the current fire protection LB meet the requirements in 10 CFR 50.48(c). (RG 1.205, Revision 0, Regulatory Position C.2.2).

Prior Approval Clarification Request 1

Current Licensing Basis:

The ONS LB relative to spurious operations for the design of the Standby Shutdown Facility (SSF) was documented in the 1982 time period. This basis recognizes that some finite amount of time is required to abandon the Control Room and activate the SSF and that some finite amount of time is required before fire growth could cause damage, resulting in hot shorts and resultant spurious operations, etc., that would create a situation where time critical operator manual actions (OMAs) could not be achieved within the values established by thermal hydraulic calculations. The amount of time assumed in the LB is 10 minutes.

Background/Basis:

September 20, 1982 letter from Duke to NRC

By letter dated July 17, 1982, the NRC provided a request for additional information (RAI) based on a review of Duke's submittals regarding the ONS Standby Shutdown Facility (SSF). Duke responded to this RAI by letter dated September 20, 1982 and included responses to nineteen (19) specific questions/requests. Request 4 addressed spurious operation of valves.

The NRC request and the Duke responses are as follows:

NRC Request:

> *"4. ...The licensee is also requested to address the spurious operations of valves or components which may affect the safe shutdown capability."*

Duke Response:

> *"...The originally accepted design concept for SSF operation was based on a 10 minute capability to transfer control to the SSF. Hot shorts or spurious actuation due to fire within the first 10 minutes of the event are not part of the design basis.*
>
> *This justification was based on the extreme unlikelihood of multiple spurious operations resulting in unacceptable coolant loss essentially coincident with loss of multiple mitigating systems within a 10 minute period.*
>
> *Fires cannot instantaneously incapacitate all equipment in a large area and can only propagate in some real finite time within finite physical limits. Furthermore, upon*

confirmation of a fire in the plant, operating personnel will be dispatched to the SSF where they will establish communication with the control room. As long as capability exists to perform vital reactor control and monitoring from the control room, the operator will maintain control from that location. If vital control and monitoring functions (e.g. reactor coolant pressure boundary, reactor coolant makeup capability) become unacceptably degraded or unavailable from the control room, a prompt transfer can be made and control established from the SSF.

As stated above, spurious operation is extremely unlikely within the first 10 minutes. To preclude unacceptable consequences of spurious operation in the longer term, circuits are designed to either preclude spurious operation or retain operability of the systems necessary to mitigate such operation. For the specific valves referenced in 4a, 4b, and 4c, if a fire occurs in any fire zone other than the SSF or the west penetration room, (SSF route to containment), the control and power source can be transferred from the existing plant to SSF. For a fire in the SSF or the west penetration room, existing mitigating capability remains available via the east penetration room and the existing plant. For the specific valves referenced in 4d & e, the power has been removed from these valves; therefore, spurious operation cannot occur."

April 28, 1983 SER from NRC to Duke

"4.7.8 -Conclusion
Based on our review, we concluded that the ONS design will provide one train of systems necessary to achieve and maintain safe shutdown conditions by utilizing either the control room or the SSF in conjunction with undamaged systems in the fire affected unit, and thus will meet the requirements of Appendix R to 10 CFR 50, Sections III.G.3 and III.L with respect to safe shutdown in the event of a fire, with the exceptions of the availability of a source range flux monitor and steam generator pressure indication at the SSF."

July 17, 1989 Inspection Report Nos. 50-269/87-02, 50-270/87-02, 50-287/87-02

"Based on the clarifications provided by DPC in the April 20, 1988 letter, and the results of an in-depth Office of Nuclear Reactor Regulation (NRR) review of this issue, we have confirmed that the previous tacit acceptance of a ten-minute delay in postulation of spurious signals in the NRC SER of April 23[sic], 1983, is still valid."

Note the Duke to NRC letter dated April 20, 1988 quoted Duke's original response to the July 17, 1982 NRC RAI #4 from September 20, 1982.

October 4, 1989 Inspection Report Nos. 50-269/89-27, 50-270/89-27, 50-287/89-27

"... Therefore it is reasonable to expect that the valves would be operable from the control room due to the diverse electrical power sources at Oconee and the time which would be required for a real fire to propagate throughout the plant."

"...A design feature for the SSF included the assumption that no spurious valve operations will occur in the first ten minutes following a fire."

June 22, 2005 NRC Supplemental Inspection Report 05000269/2005006, 05000270/2005006, and 05000287/2005006

"...The SSF Emergency Operating Procedure was revised in 2003 to include manning the SSF on a confirmed active fire in the main control room, cable room, or turbine building. A confirmed active fire was defined as a locally observed fire with smoke and either radiant heat or visible flame."

Duke Licensing Interpretation of the NRC SER

Other than the two (2) exceptions noted in the SER conclusion statement, no other issues or exceptions were taken with the proposed design of the SSF. The NRC SER did not "repeat back" all of the details of the docketed Duke licensing and design basis. However, this was not uncommon for fire protection related SERs of that period. Implicit acceptance of the docketed licensing and design basis is assumed.

Request

As part of this LAR submittal and transition to NFPA 805, it is requested that the NRC formally document as a "prior approval" recognition that during the 10 minutes required to activate the SSF, fire growth will not have reached a point where fire damage will preclude operator actions from the Control Room nor will any spurious valve operations or loss of offsite power conditions occur within the first 10 minutes following the identification of a confirmed active fire.

Prior Approval Clarification Request 2

Current Licensing Basis:

10 CFR 50.48(b) compliance for fire areas BOP (Balance of Plant), BH1/2 (Blockhouse Units 1/2), and BH3 (Blockhouse Unit 3) utilizes dedicated shutdown capability per Section III.G.3 and III.L of 10 CFR 50, Appendix R. Other than for the Control Room, no exemption from the fixed suppression and fire detection requirements of Section III.G.3 of 10 CFR 50, Appendix R is required.

Background/Basis:

PRE-APPENDIX R

The ONS Fire Protection SER dated August 11, 1978 reviewed the station commitments as compared to Appendix A to BTP APCSB 9.5-1, which was the implementing guidance at the time.

The ONS approach was based on installation of a dedicated shutdown system, or Standby Shutdown Facility (SSF). The NRC recognized this design approach in the SER as follows:

> *"The licensee's approach to fire protection for this plant is different from methods used by other licensees to meet the staff BTP or objectives outlined in Section 2.2 of this report. The difference is that the licensee has proposed to install a dedicated shutdown system which will enable the plant to be shutdown even if other systems are adversely affected. For this reason, the staff has not required as heavy a reliance on the ability to promptly detect or suppress fires as we have requested in other plants. This option is addressed in BTP 9.5-1 as an acceptable alternative to meeting the specific fire protection measures prescribed by BTP 9.5-1. In other plants, the plant can be brought to safe shutdown but an independent system has not been proposed. Therefore, the ability to detect and suppress a fire has greater significance than in this case where we have the dedicated shutdown system."*

POST-APPENDIX R

10 CFR 50, Appendix R, Section III.G.3 states:

> *"Alternative or dedicated shutdown capability and its associated circuits, independent of cables, systems or components in the area, room, zone under consideration should be provided:*
>
> *a. Where the protection of systems whose function is required for hot shutdown does not satisfy the requirement of paragraph G.2 of this section; or*
>
> *b. Where redundant trains of systems required for hot shutdown located in the same fire area may be subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems.*

c. In addition, fire detection and a fixed fire suppression system shall be installed in the area, room, or zone under consideration."

REFERENCE REQUEST LETTER

An exemption request for the East and West Penetrations Rooms was submitted and the NRC responded that an exemption for the East and West Penetrations Rooms was not necessary, but an exemption for the Control Room was required in the April 14, 1981 letter.

ONS submitted an exemption request for lack of fixed suppression in the Control Rooms, which was granted by the NRC by letter dated February 2, 1982.

ONS did not obtain an exemption from the fixed suppression and fire detection requirements of Section III.G.3 of 10 CFR 50, Appendix R. As stated in the above excerpt from the NRC SER dated August 11, 1978, *"...For this reason, the staff has not required as heavy a reliance on the ability to promptly detect or suppress fires as we have requested in other plants...*

Since ONS was achieving compliance by installing a dedicated shutdown system, it may explain the confusion as to the need for an exemption when a licensee was going to comply with Section III.G.3 of 10 CFR 50, Appendix R.

The SER cover letter states:

"The SSF design was to resolve the safe shutdown requirements for fire protection (Appendix R to 10 CFR 50, Sections III.G.3 and III.L)..." "We find your SSF design meets the appropriate requirements with the exception of process monitoring instruments for source range flux monitoring and steam generation pressure indication."

Section 4.7.3 Remaining Plant Areas states:

"The staff's August 22, 1978 SER identified many areas of the ONS that did not meet various fire protection safe shutdown requirements. Rather than correcting the individual deficiencies by modifications to the already installed components, a dedicated shutdown system (the SSF) was proposed. The intent of the use of the SSF along with the undamaged systems in the fire affected unit is to meet the requirements of Sections III.G.3 and III.L of Appendix R."

Note that although the above NRC SER references an August 22, 1978 SER, the actual SER date is August 11, 1978.

Section 4.7.8 Conclusion states:

"Based on our review, we conclude that the ONS design will provide one train of systems necessary to achieve and maintain safe shutdown conditions by utilizing either the control room or the SSF in conjunction with undamaged systems in the fire affected unit, and thus will meet the requirements of Appendix R to 10 CFR 50, Sections III.G.3 and III.L with respect to safe shutdown in the event of a fire,

with the exceptions of the availability of a source range flux monitor and steam generator pressure indication at the SSF."

Request

As part of this LAR submittal and transition to NFPA 805, it is requested that the NRC formally document as a "prior approval" previous acceptance by the NRC in the early 1980's that installation of fixed suppression and detection systems is not necessary to comply with Section III.G.3 of 10 CFR 50, Appendix R for fire areas BOP, BH1/2, and BH3, which utilize a dedicated shutdown capability.

Prior Approval Clarification Request 3

Current Licensing Basis:

An exemption was granted for lack of fixed suppression in the Control Room per 10 CFR 50, Appendix R, Section III.G.3 criteria. In that exemption the NRC referred to hose stations 'in' the Control Room as part of the basis for acceptability. The hose stations are adjacent to the Control Rooms.

Background/Basis:

On April 30, 1981, Duke requested an exemption from 10 CFR 50, Appendix R Section III.G.3, in that fixed suppression was not provided in the ONS Control Rooms. The NRC approved this exemption in a letter dated February 2, 1982 stating:

> *"We have reviewed your April 30, 1981, request for exemption and have concluded that a sound technical basis for not requiring a fixed fire suppression system in the Control Rooms has been provided. Therefore, we have granted an exemption, enclosed, from the requirements o f 10 CFR 50, Appendix R, Item III.G.3, stating that a fixed suppression system is not required in the Control Rooms."*

The February 2, 1982 letter further stated the following as the bases for acceptability:

- Remote Standby Shutdown Facility is separated from Control Room by 3-hour fire barriers
- Fire detection system is installed in the Control Room
- Hose station and fire extinguishers is installed within the Control Room.
- Continuous manning of the Control Room to promptly use manual suppression.

Although the February 2, 1982 NRC letter approving the exemption includes the statement that hose stations and fire extinguishers are installed within the Control Room. This statement was not made in the submittal from Duke to the NRC dated April 30, 1981, but may have been based on a Duke letter dated May 15, 1981 which lists hose stations protecting the Control Room area. The May 15, 1981 letter was referenced in the NRC's safety evaluation dated June 9, 1981 approving Amendments 98, 98, and 95 for ONS Units 1, 2, and 3 respectively.

Extinguishers are provided in the ONS Units 1 and 2, and Unit 3 Control Rooms. However hose stations are provided outside of the Control Room. These are positioned for access to the Control Room in the event of a fire. The Unit 1 and 2 Control Room has three hose stations: one is located just outside the Unit 1 Control Room Lobby on the TB Operating Deck, the second is in the Single Point of Access (SPA) outside of the Unit 2 Control Room access door, and the third is in the back stairway of the Control Room. The Unit 3 Control Room has two hose stations, one located in the office area on the Turbine Building Operating Deck outside of the north Control Room access door and one located in the back stairway of the Control Room.

Request

As part of this LAR submittal and transition to NFPA 805, it is requested that the NRC formally document as a "prior approval" recognition that hose stations are not provided "in" the Control Room, but rather are available to fight a fire in the Control Rooms from adjacent areas.

Prior Approval Clarification Request 4

Current Licensing Basis:

An exemption was granted for less than 20 feet spatial separation with no intervening combustibles between redundant pressurizer level instruments in the ONS Reactor Buildings per 10 CFR 50, Appendix R, Section III.G.2 criteria. In that exemption the spacing was referred to as approximately 15 feet.

Background/Basis:

On November 11, 1983, Duke requested an exemption from 10 CFR 50, Appendix R Section III.G.2, in that the redundant pressurizer level instruments were not spatially separated by at least 20 feet with no intervening combustibles. This was based on a previous submittal regarding cable and component separation in the ONS Reactor Buildings dated April 30, 1981. This submittal was further supplemented by a letter dated February 28, 1985 which provided photos and drawings of the Unit 3 Reactor Building component and cable locations. The NRC approved this exemption in a letter dated August 21, 1989 stating:

> *"In the first case, Duke stated that the pressurizer level transmitter in the Unit 1 reactor building is separated by about 15 feet from the balance of plant instruments although there are no intervening combustibles..."*

The August 21, 1989 letter further stated the following as the bases for acceptability for Unit 1:

- "*...although there are no intervening combustibles between them, the two instruments are separated by only 15 feet. Furthermore, in the rest of the area, the combustible loading, which consists primarily of cable, is low.*"
- "*... Duke has incorporated administrative controls to limit transient combustibles and inspections to detect any combustibles before starting the unit after an outage.*"
- "*...Also, reactor buildings are huge structures whose appreciable volume dissipates the heat from a fire.*"
- "*...for the first case of pressurizer level instrumentation, the staff finds that low combustible loadings and large RB volume provide reasonable assurance that the fire brigade would be able to extinguish a fire before it develops to the point of preventing a safe plant shutdown.*"

The NRC concluded that "... *Duke's fire protection features within the RB meet the underlying purpose of the rule because they provide an equivalent level of fire protection as would literal compliance with Appendix R.*"

Based on recent field measurements, the actual physical separation of the redundant pressurizer level instruments in the Unit 1 Reactor Building (1RC LT 0004P1 and 1RC LT 00072) is approximately 6 feet versus the "*about 15 feet*" cited previously.

Request

As part of this LAR submittal and transition to NFPA 805, it is requested that the NRC formally document as a "prior approval clarification" that the exemption was granted to the 10 CFR 50 Appendix R III.G.2 requirement of 20 feet of separation with no intervening combustibles and was based only on the separation distance being less than 20 feet with a lack of intervening combustibles coupled with a large Reactor Building volume to preclude fire damage prior to fire brigade extinguishment. In this way, the specific separation distance (15 feet) was not itself a basis for the NRC decision to grant the exemption, and thus the exemption is still valid for the current separation distance (~6 feet).

Prior Approval Clarification Request 5

Current Licensing Basis:

An exemption was granted for non-rated cork expansion joints between the ONS Reactor Buildings and Auxiliary Building at the ceiling of the West Penetration Room per 10 CFR 50, Appendix R, Section III.G.2.a criteria. In that exemption, it was stated that there were no fixed combustibles near the exposed cork.

Background/Basis:

On November 11, 1983, Duke requested an exemption from 10 CFR 50, Appendix R Section III.G.2.a, because the seismic expansion joints used in fire barriers between the Auxiliary Building and Reactor Building at the ceiling of the West Penetration Rooms were not rated for a 3 hour fire resistance. This was supplemented by additional information in letters dated February 25, 1985 and April 21, 1987: An August 21, 1989 letter granting the exemption stated the following as the bases for acceptability:

- "*...First, the combustible loading is low. It consists primarily of cable insulation for fan motors and lights. No fixed combustibles are installed near the exposed cork.*"
- "*... The penetration rooms, constructed of reinforced concrete, have a ceiling height of about 25 feet. The area above the east and west penetration rooms contains only air handling equipment. The west penetration room only contains cables of one train of equipment necessary to achieve safe shutdown. If a fire were to occur, the redundant safe shutdown equipment would not be affected.*"
- "*...Because this area has low combustible loading, the area is unlikely to have a fire that would propagate through the expansion joints into the east and west penetration rooms and damage redundant safe shutdown equipment .*"
- "*...Smoke detectors have been installed by Duke throughout the east and west penetration rooms.*"
- "*...Although this area does not have fire suppression, it does have portable extinguishers and manual hose stations.*"
- "*...Finally, the distance between the combustibles and the exposed cork and also the separation distance between the two trains of safe shutdown equipment provide sufficient protection to ensure the ability to achieve and maintain safe shutdown until Duke extinguishes the fire.*

The NRC goes on to conclude that "... *the low combustible loading, the automatic fire detection, the passive protection of fire area boundaries, and the separation of safe shutdown equipment provide reasonable assurance that fire brigade would be able to extinguish a fire before it develops to the point of preventing safe shutdown. Furthermore, the staff finds acceptable the compressed cork used in the seismic expansion joints located at the ceiling of the west penetration room, for each of the three units, because the cork does not decrease the level of fire protection..*"

At some point in time Oconee installed very limited combustible Armaflex/Rubatex insulation material on the cork similar to that described in another exemption granted within the same August 21, 1989 letter. The conclusions of that exemption state,"...*Information concerning Rubatex was submitted to the staff as part of the licensing review for Catawba Nuclear Station. The staff has accepted use of this material...*

For the Oconee Nuclear Station, 'Armaflex', a similar material with a flame spread index of 50 or less was submitted to the staff for review by Duke's letter dated January 25, 1978. The use of this material in an arrangement similar to that used in the ceiling of the west penetration room was accepted as described in the Oconee .Fire Protection Safety Evaluation Report dated August 11, 1978."

Request

As part of this LAR submittal and transition to NFPA 805, it is requested that the NRC formally document as a "prior approval clarification" that the use of the Armaflex/Rubatex material on the surface of the exposed cork as a protectant is acceptable since the material is of such limited combustibility that the original exemption bases of no fixed combustibles near the exposed cork is still considered a true statement.

Prior Approval Clarification Request 6

Current Licensing Basis:

ONS credits the use of a portable submersible pumping system with sufficient makeup capability for the SSF water supply to ensure SSF decay heat removal function for a 72 hour period. The use of this Submersible Pump is considered an acceptable hot standby repair.

Background/Basis:

In the October 4, 1989 NRC Inspection Report Nos. 50-269/89-27, 50-270/89-27 and 50-287/89-27, Unresolved Item 269, 170, 287/87-01-02, Determine the Acceptability of the SSF Dedicated Pump was closed.

> *"The licensee identified the above deficiency in a licensee event report (LER) dated October 15, 1986 and as discussed in detail under their Station Modification Design Summary – NSM-52634 of December 5, 1986. The available water supply was not adequate to enable the SSF to accomplish its design function to maintain hot shutdown as long as 72 hours during an Appendix R scenario. In order to resolve this issue, the licensee has provided a portable submersible pumping system with sufficient makeup capability for the SSF water supply to ensure SSF hot shutdown decay heat removal for a 72 hour period. This portable pumping system is stored in a vital area when not in use, and will be electronically as well as mechanically assembled and installed at the intake structure as an immediate action upon activation of the SSF. Since its operation is not required for a [sic] least three hours following a postulated fire event which necessitates SSF activation, we find that the portable submersible pumping system is an acceptable means of ensuring a sufficient water supply of the SSF.*
>
> *The staff notes that the proposed approach at Oconee departs from practices which have previously been found acceptable at other plants. However, the staff believes the approach used at Oconee is unique and is supported by plant procedures and operator training which allows installation in sufficient time to support SSF operations, and is therefore acceptable."*

Request

As part of this LAR submittal and transition to NFPA 805, it is requested that the NRC formally document as a "prior approval clarification" the use of the Submersible Pump as an acceptable hot standby repair.

ENCLOSURE 3

FACILITY OPERATING LICENSE, TECHNICAL SPECIFICATIONS, AND TECHNICAL SPECIFICATIONS BASES - MARKUP

6. To increase the possibility of achieving greater reliability and economy of electric generation and transmission facilities, applicant will discuss load projections and system development plans with any neighboring entity(ies).

7. When applicant's plans for future nuclear generating units (for which application will hereafter be made to the Nuclear Regulatory Commission) have reached the stage of serious planning, but before firm decisions have been made as to the size and desired completion date of the proposed nuclear units, applicant will notify all neighboring entities, including distribution systems with peak loads smaller than applicant's, that applicant plans to construct such nuclear units. Neither the timing nor the information provided need be such as to jeopardize obtaining the required site at the lowest possible cost.

8. The foregoing commitments shall be implemented in a manner consistent with the provisions of the Federal Power Act and all other lawful local, State and Federal regulation and authority. Nothing in these commitments is intended to determine in advance the resolution of issues which are properly raised at the Federal Energy Regulatory Commission concerning such commitments, including allocation of costs or the rates to be charged. Applicant will negotiate (including the execution of a contingent statement of intent) with respect to the foregoing commitments with any neighboring entity including distribution systems where applicable engaging in or proposing to engage in bulk power supply transactions, but applicant shall not be required to enter into any final arrangement prior to resolution of any substantial questions as to the lawful authority of an entity to engage in the transactions. In addition, applicant shall not be obligated to enter into a given bulk power supply transaction if: (1) to do so would violate, or incapacitate it from performing any existing lawful contract it has with a third party; (2) there is contemporaneously available to it, a competing or alternative arrangement which affords it greater benefits which would be mutually exclusive of such arrangement; (3) to do so would adversely affect its system operations or the reliability of power supply to its customers; or (4) if to do so would jeopardize applicant's ability to finance or construct on reasonable terms facilities needed to meet its own anticipated system requirements.

D. Fire Protection

Insert [redacted] A

~~Duke Energy Carolinas, LLC shall implement and maintain in effect all~~ provisions of the approved fire protection program as described in the UFSAR for the facility and as approved in the SER's dated August 11, 1978, and April 8, 1983; October 5, 1978, and June 9, 1981 Supplements to the SER dated ~~August 11, 1978, and Exemptions dated February 2, 1982, August 31, 1983,~~

~~December 27, 1984; December 5, 1988; and August 21, 1989 subject to the following provision:~~

~~The licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.~~

E. Physical Protection

Duke Energy Carolinas, LLC shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contains safeguards information protected under 10 CFR 73.21, is entitled: "Duke Energy Physical Security Plan" submitted by letter dated September 8, 2004, and supplemented on September 30, 2004, October 15, 2004, October 21, 2004, and October 27, 2004.

F. In the update to the UFSAR required pursuant to 10 CFR 50.71(e)(4) scheduled for July, 2001, the licensee shall update the UFSAR to include the UFSAR supplement submitted pursuant to 10 CFR 54.21(d) as revised on March 27, 2000. Until the UFSAR update is complete, the licensee may make changes to the programs described in its UFSAR supplement without prior Commission approval, provided that the licensee evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

G. The licensee's UFSAR supplement submitted pursuant to 10 CFR 54.21(d), as revised on March 27, 2000, describes certain future inspection activities to be completed before the period of extended operation. The licensee shall complete these activities no later than February 6, 2013.

6. To increase the possibility of achieving greater reliability and economy of electric generation and transmission facilities, applicant will discuss load projections and system development plans with any neighboring entity(ies).

7. When applicant's plans for future nuclear generating units (for which application will hereafter be made to the Nuclear Regulatory Commission) have reached the stage of serious planning, but before firm decisions have been made as to the size and desired completion date of the proposed nuclear units, applicant will notify all neighboring entities, including distribution systems with peak loads smaller than applicant's, that applicant plans to construct such nuclear units. Neither the timing nor the information provided need be such as to jeopardize obtaining the required site at the lowest possible cost.

8. The foregoing commitments shall be implemented in a manner consistent with the provisions of the Federal Power Act and all other lawful local, State and Federal regulation and authority. Nothing in these commitments is intended to determine in advance the resolution of issues which are properly raised at the Federal Energy Regulatory Commission concerning such commitments, including allocation of costs or the rates to be charged. Applicant will negotiate (including the execution of a contingent statement of intent) with respect to the foregoing commitments with any neighboring entity including distribution systems where applicable engaging in or proposing to engage in bulk power supply transactions, but applicant shall not be required to enter into any final arrangement prior to resolution of any substantial questions as to the lawful authority of an entity to engage in the transactions. In addition, applicant shall not be obligated to enter into a given bulk power supply transaction if: (1) to do so would violate, or incapacitate it from performing any existing lawful contract it has with a third party; (2) there is contemporaneously available to it, a competing or alternative arrangement which affords it greater benefits which would be mutually exclusive of such arrangement; (3) to do so would adversely affect its system operations or the reliability of power supply to its customers; or (4) if to do so would jeopardize applicant's ability to finance or construct on reasonable terms facilities needed to meet its own anticipated system requirements.

D. Fire Protection — insert [redacted] A

~~Duke Energy Carolinas, LLC shall implement and maintain in effect all provisions of the approved fire protection program as described in the UFSAR for the facility and as approved in the SER's dated August 11, 1978, and April 28, 1983; October 5, 1978, and June 9, 1981 Supplements to the SER dated August 11, 1978; and Exemptions dated February 2, 1982, August 31, 1983;~~

~~December 27, 1984; December 5, 1988, and August 21, 1989 subject to the following provision:~~

~~The licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.~~

E. Physical Protection

Duke Energy Carolinas, LLC shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contains safeguards information protected under 10 CFR 73.21, is entitled: "Duke Energy Physical Security Plan" submitted by letter dated September 8, 2004, and supplemented on September 30, 2004, October 15, 2004, October 21, 2004, and October 27, 2004.

F. In the update to the UFSAR required pursuant to 10 CFR 50.71(e)(4) scheduled for July, 2001, the licensee shall update the UFSAR to include the UFSAR supplement submitted pursuant to 10 CFR 54.21(d) as revised on March 27, 2000. Until the UFSAR update is complete, the licensee may make changes to the programs described in its UFSAR supplement without prior Commission approval, provided that the licensee evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

G. The licensee's UFSAR supplement submitted pursuant to 10 CFR 54.21(d), as revised on March 27, 2000, describes certain future inspection activities to be completed before the period of extended operation. The licensee shall complete these activities no later than February 6, 2013.

6. To increase the possibility of achieving greater reliability and economy of electric generation and transmission facilities, applicant will discuss load projections and system development plans with any neighboring entity(ies).

7. When applicant's plans for future nuclear generating units (for which application will hereafter be made to the Nuclear Regulatory Commission) have reached the stage of serious planning, but before firm decisions have been made as to the size and desired completion date of the proposed nuclear units, applicant will notify all neighboring entities, including distribution systems with peak loads smaller than applicant's, that applicant plans to construct such nuclear units. Neither the timing nor the information provided need be such as to jeopardize obtaining the required site at the lowest possible cost.

8. The foregoing commitments shall be implemented in a manner consistent with the provisions of the Federal Power Act and all other lawful local, State and Federal regulation and authority. Nothing in these commitments is intended to determine in advance the resolution of issues which are properly raised at the Federal Energy Regulatory Commission concerning such commitments, including allocation of costs or the rates to be charged. Applicant will negotiate (including the execution of a contingent statement of intent) with respect to the foregoing commitments with any neighboring entity including distribution systems where applicable engaging in or proposing to engage in bulk power supply transactions, but applicant shall not be required to enter into any final arrangement prior to resolution of any substantial questions as to the lawful authority of an entity to engage in the transactions. In addition, applicant shall not be obligated to enter into a given bulk power supply transaction if: (1) to do so would violate, or incapacitate it from performing any existing lawful contract it has with a third party; (2) there is contemporaneously available to it, a competing or alternative arrangement which affords it greater benefits which would be mutually exclusive of such arrangement; (3) to do so would adversely affect its system operations or the reliability of power supply to its customers; or (4) if to do so would jeopardize applicant's ability to finance or construct on reasonable terms facilities needed to meet its own anticipated system requirements.

D. Fire Protection — Insert [redacted] A

~~Duke Energy Carolinas, LLC shall implement and maintain in effect all provisions of the approved fire protection program as described in the UFSAR for the facility and as approved in the SER's dated August 11, 1978, and April 28, 1983, October 5, 1978, and June 9, 1981 Supplements to the SER dated August 11, 1978, and Exemptions dated February 2, 1982, August 31, 1983,~~

~~December 27, 1984, December 5, 1988, and August 21, 1989 subject to the following provision:~~

~~The licensee may make changes to the approved fire protection program without prior approval of the Commission only if these changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.~~

E. ~~Physical Protection~~

Duke Energy Carolinas, LLC shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contains safeguards information protected under 10 CFR 73.21, is entitled: "Duke Energy Physical Security Plan" submitted by letter dated September 8, 2004, and supplemented on September 30, 2004, October 15, 2004, October 21, 2004, and October 27, 2004.

F. In the update to the UFSAR required pursuant to 10 CFR 50.71(e)(4) scheduled for July, 2001, the licensee shall update the UFSAR to include the UFSAR supplement submitted pursuant to 10 CFR 54.21(d) as revised on March 27, 2000. Until the UFSAR update is complete, the licensee may make changes to the programs described in its UFSAR supplement without prior Commission approval, provided that the licensee evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

G. The licensee's UFSAR supplement submitted pursuant to 10 CFR 54.21(d), as revised on March 27, 2000, describes certain future inspection activities to be completed before the period of extended operation. The licensee shall complete these activities no later than February 6, 2013.

Insert [redacted] A:

safety evaluation report dated April 28, 1983 and in

Duke Energy Carolinas, LLC shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c) as specified in the license amendment request dated _____ and as approved in the safety evaluation report dated _____ (and supplements dated _____). The licensee may make changes to the fire protection program without prior approval of the Commission if those changes satisfy the provisions set forth in 10 CFR 50.48(a), 10 CFR 50.48(c), and the following:

(a) Prior NRC review and approval is not required for a change that results in a net decrease in risk for both CDF and LERF. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. The change may be implemented following completion of the change evaluation. Change reports need not be submitted to the NRC for these changes.

(b) Prior NRC review and approval is not required if the change results in a net calculated risk increase less than 1E-7/yr for CDF and less than 1E-8/yr for LERF. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. The change may be implemented following completion of the change evaluation. Change reports need not be submitted to the NRC for these changes.

(c) Where the calculated plant change risk increase is <1E-6/yr, but ≥1E-7/yr for CDF or <1E-7/yr, but ≥1E-8/yr for LERF, the licensee must submit a summary description of the change to the NRC following completion of the change evaluation. The proposed change also must be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. If the NRC ~~will respond~~ does not object to the change within 90 days, the licensee may proceed with implementation of the proposed change.

Duke Energy Carolinas, LLC may perform change evaluations for deviations from the codes, standards, and listings referenced in NFPA 805, without a 10 CFR 50.90 submittal, as long as the specific requirement for the feature is not included in NFPA 805 Chapter 3, and the NFPA 805 change process is used.

5.0 ADMINISTRATIVE CONTROLS

5.4 Procedures

5.4.1 Written procedures shall be established, implemented, and maintained covering the following activities:

a. The applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978;

b. The emergency operating procedures required to implement the requirements of NUREG-0737 and NUREG-0737, Supplement 1, as stated in Generic Letter 82-33;

and

c. Quality assurance for effluent and environmental monitoring;

~~d. Fire Protection Program Implementation; and~~

de. All programs specified in Specification 5.5.

B 3.10 STANDBY SHUTDOWN FACILITY

B 3.10.1 Standby Shutdown Facility (SSF)

BASES

BACKGROUND

The Standby Shutdown Facility (SSF) is designed as a standby system for use under certain emergency conditions. The system provides additional "defense in-depth" protection for the health and safety of the public by serving as a backup to existing safety systems. The SSF is provided as an alternate means to achieve and maintain the unit in MODE 3 with average RCS temperature ≥ 525°F (unless the initiating event causes the unit to be driven to a lower temperature) following 10 CFR 50 ~~Appendix R~~ fire, sabotage, turbine building flood, station blackout (SBO) and tornado missile events, and is designed in accordance with criteria associated with these events. In that the SSF is a backup to existing safety systems, the single failure criterion is not required. Failures in the SSF systems will not cause failures or inadvertent operations in other plant systems. The SSF requires manual activation and can be activated if emergency systems are not available.

.48(c)

.48(c)

The SSF is designed to maintain the reactor in a safe shutdown condition for a period of 72 hours following 10 CFR 50 ~~Appendix R~~ fire, turbine building flood, sabotage, SBO, or tornado missile events. This is accomplished by re-establishing and maintaining Reactor Coolant Pump Seal cooling; assuring natural circulation and core cooling by maintaining the primary coolant system filled to a sufficient level in the pressurizer while maintaining sufficient secondary side cooling water; and maintaining the reactor subcritical by isolating all sources of Reactor Coolant System (RCS) addition except for the Reactor Coolant Makeup System which supplies makeup of a sufficient boron concentration.

The main components of the SSF are the SSF Auxiliary Service Water (ASW) System, SSF Portable Pumping System, SSF Reactor Coolant (RC) Makeup System, SSF Power System, and SSF Instrumentation.

The SSF ASW System is a high head, high volume system designed to provide sufficient steam generator (SG) inventory for adequate decay heat removal for three units during a loss of normal AC power in conjunction with the loss of the normal and emergency feedwater systems. One motor driven SSF ASW pump, located in the SSF, serves all three units. The SSF ASW pump, two HVAC service water pumps, and the Diesel Service Water (DSW) pump share a common suction supply of lake water from the embedded Unit 2 condenser circulating water (CCW) piping. The SSF DSW pump and an HVAC pump must be operable in order to satisfy the operability requirements for the Power System. (Only one HVAC service water pump is required to be operable to satisfy the LCO.)

B 3.10 STANDBY SHUTDOWN FACILITY

B 3.10.2 Standby Shutdown Facility (SSF) Battery Cell Parameters

BASES

BACKGROUND

This LCO delineates the limits on electrolyte temperature level, float voltage, and specific gravity for the SSF Power System batteries. A discussion of these batteries and their OPERABILITY requirements is provided in the Bases for LCO 3.10.1, "Standby Shutdown Facility (SSF)."

APPLICABLE SAFETY ANALYSES

The SSF serves as a backup for existing safety systems to provide an alternate and independent means to achieve and maintain one, two, or three Oconee units in MODE 3 with average RCS temperature ≥ 525°F (unless the initiating event causes the unit to be driven to a lower temperature) for up to 72 hours following a 10 CFR 50 ~~Appendix R~~ fire event, a turbine building flood, sabotage, SBO, or tornado missile events (Refs. 1, 5, 6, and 7).

.48(c)

The OPERABILITY of the SSF DC system is consistent with the assumptions of the Oconee Probabilistic Risk Assessment (Ref. 2). Therefore, the SSF battery cell parameters satisfy Criterion 4 of 10 CFR 50.36 (Ref. 3).

LCO

.48(c)

The SSF Battery cell parameters must remain within acceptable limits to ensure availability of the required SSF Power System DC power to shut down the reactor and maintain it in a safe condition after a 10 CFR 50 ~~Appendix R~~ fire, turbine building flood, sabotage, SBO, or tornado missile events. Electrolyte limits are conservatively established, allowing continued DC electrical system function even with Category A and B limits not met.

APPLICABILITY

The SSF battery cell parameters are required solely for the support of the associated SSF power system battery. Therefore, battery cell parameters are only required to be met when the SSF DC power source is required to be OPERABLE. Refer to the Applicability discussion in Bases for LCO 3.10.1.

ENCLOSURE 4

FACILITY OPERATING LICENSE, TECHNICAL SPECIFICATIONS, AND TECHNICAL SPECIFICATIONS BASES - RETYPE

6. To increase the possibility of achieving greater reliability and economy of electric generation and transmission facilities, applicant will discuss load projections and system development plans with any neighboring entity(ies).

7. When applicant's plans for future nuclear generating units (for which application will hereafter be made to the Nuclear Regulatory Commission) have reached the stage of serious planning, but before firm decisions have been made as to the size and desired completion date of the proposed nuclear units, applicant will notify all neighboring entities, including distribution systems with peak loads smaller than applicant's, that applicant plans to construct such nuclear units. Neither the timing nor the information provided need be such as to jeopardize obtaining the required site at the lowest possible cost.

8. The foregoing commitments shall be implemented in a manner consistent with the provisions of the Federal Power Act and all other lawful local, State and Federal regulation and authority. Nothing in these commitments is intended to determine in advance the resolution of issues which are properly raised at the Federal Energy Regulatory Commission concerning such commitments, including allocation of costs or the rates to be charged. Applicant will negotiate (including the execution of a contingent statement of intent) with respect to the foregoing commitments with any neighboring entity including distribution systems where applicable engaging in or proposing to engage in bulk power supply transactions, but applicant shall not be required to enter into any final arrangement prior to resolution of any substantial questions as to the lawful authority of an entity to engage in the transactions. In addition, applicant shall not be obligated to enter into a given bulk power supply transaction if: (1) to do so would violate, or incapacitate it from performing any existing lawful contract it has with a third party; (2) there is contemporaneously available to it, a competing or alternative arrangement which affords it greater benefits which would be mutually exclusive of such arrangement; (3) to do so would adversely affect its system operations or the reliability of power supply to its customers; or (4) if to do so would jeopardize applicant's ability to finance or construct on reasonable terms facilities needed to meet its own anticipated system requirements.

D. Fire Protection

Duke Energy Carolinas, LLC shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c) as specified in safety evaluation report dated April 28, 1983 and in the license amendment request dated _____ and as approved in the safety evaluation report dated _____ (and supplements dated _____). The licensee may make changes to the fire protection program without prior approval of the Commission if those changes satisfy the provisions set forth in 10 CFR 50.48(a), 10 CFR 50.48(c), and the following:

(a) Prior NRC review and approval is not required for a change that results in a net decrease in risk for both CDF and LERF. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient

safety margins. The change may be implemented following completion of the change evaluation. Change reports need not be submitted to the NRC for these changes.

(b) Prior NRC review and approval is not required if the change results in a net calculated risk increase less than 1E-7/yr for CDF and less than 1E-8/yr for LERF. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. The change may be implemented following completion of the change evaluation. Change reports need not be submitted to the NRC for these changes.

(c) Where the calculated plant change risk increase is <1E-6/yr, but ≥1E-7/yr for CDF or <1E-7/yr, but ≥1E-8/yr for LERF, the licensee must submit a summary description of the change to the NRC following completion of the change evaluation. The proposed change also must be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. If the NRC does not object to the change within 90 days, the licensee may proceed with implementation of the proposed change.

Duke Energy Carolinas, LLC may perform change evaluations for deviations from the codes, standards, and listings referenced in NFPA 805, without a 10 CFR 50.90 submittal, as long as the specific requirement for the feature is not included in NFPA 805 Chapter 3, and the NFPA 805 change process is used.

E. Physical Protection

Duke Energy Carolinas, LLC shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contains safeguards information protected under 10 CFR 73.21, is entitled: "Duke Energy Physical Security Plan" submitted by letter dated September 8, 2004, and supplemented on September 30, 2004, October 15, 2004, October 21, 2004, and October 27, 2004.

F. In the update to the UFSAR required pursuant to 10 CFR 50.71(e)(4) scheduled for July, 2001, the licensee shall update the UFSAR to include the UFSAR supplement submitted pursuant to 10 CFR 54.21(d) as revised on March 27, 2000. Until the UFSAR update is complete, the licensee may make changes to the programs described in its UFSAR supplement without prior Commission approval, provided that the licensee evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

G. The licensee's UFSAR supplement submitted pursuant to 10 CFR 54.21(d), as revised on March 27, 2000, describes certain future inspection activities to be completed before the period of extended operation. The licensee shall complete these activities no later than February 6, 2013.

6. To increase the possibility of achieving greater reliability and economy of electric generation and transmission facilities, applicant will discuss load projections and system development plans with any neighboring entity(ies).

7. When applicant's plans for future nuclear generating units (for which application will hereafter be made to the Nuclear Regulatory Commission) have reached the stage of serious planning, but before firm decisions have been made as to the size and desired completion date of the proposed nuclear units, applicant will notify all neighboring entities, including distribution systems with peak loads smaller than applicant's, that applicant plans to construct such nuclear units. Neither the timing nor the information provided need be such as to jeopardize obtaining the required site at the lowest possible cost.

8. The foregoing commitments shall be implemented in a manner consistent with the provisions of the Federal Power Act and all other lawful local, State and Federal regulation and authority. Nothing in these commitments is intended to determine in advance the resolution of issues which are properly raised at the Federal Energy Regulatory Commission concerning such commitments, including allocation of costs or the rates to be charged. Applicant will negotiate (including the execution of a contingent statement of intent) with respect to the foregoing commitments with any neighboring entity including distribution systems where applicable engaging in or proposing to engage in bulk power supply transactions, but applicant shall not be required to enter into any final arrangement prior to resolution of any substantial questions as to the lawful authority of an entity to engage in the transactions. In addition, applicant shall not be obligated to enter into a given bulk power supply transaction if: (1) to do so would violate, or incapacitate it from performing any existing lawful contract it has with a third party; (2) there is contemporaneously available to it, a competing or alternative arrangement which affords it greater benefits which would be mutually exclusive of such arrangement; (3) to do so would adversely affect its system operations or the reliability of power supply to its customers; or (4) if to do so would jeopardize applicant's ability to finance or construct on reasonable terms facilities needed to meet its own anticipated system requirements.

D. Fire Protection

Duke Energy Carolinas, LLC shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c) as specified in safety evaluation report dated April 28, 1983 and in the license amendment request dated _____ and as approved in the safety evaluation report dated _____ (and supplements dated _____). The licensee may make changes to the fire protection program without prior approval of the Commission if those changes satisfy the provisions set forth in 10 CFR 50.48(a), 10 CFR 50.48(c), and the following:

(a) Prior NRC review and approval is not required for a change that results in a net decrease in risk for both CDF and LERF. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. The change may be implemented following completion of the

change evaluation. Change reports need not be submitted to the NRC for these changes.

(b) Prior NRC review and approval is not required if the change results in a net calculated risk increase less than 1E-7/yr for CDF and less than 1E-8/yr for LERF. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. The change may be implemented following completion of the change evaluation. Change reports need not be submitted to the NRC for these changes.

(c) Where the calculated plant change risk increase is <1E-6/yr, but ≥1E-7/yr for CDF or <1E-7/yr, but ≥1E-8/yr for LERF, the licensee must submit a summary description of the change to the NRC following completion of the change evaluation. The proposed change also must be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. If the NRC does not object to the change within 90 days, the licensee may proceed with implementation of the proposed change.

Duke Energy Carolinas, LLC may perform change evaluations for deviations from the codes, standards, and listings referenced in NFPA 805, without a 10 CFR 50.90 submittal, as long as the specific requirement for the feature is not included in NFPA 805 Chapter 3, and the NFPA 805 change process is used.

E. Physical Protection

Duke Energy Carolinas, LLC shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contains safeguards information protected under 10 CFR 73.21, is entitled: "Duke Energy Physical Security Plan" submitted by letter dated September 8, 2004, and supplemented on September 30, 2004, October 15, 2004, October 21, 2004, and October 27, 2004.

F. In the update to the UFSAR required pursuant to 10 CFR 50.71(e)(4) scheduled for July, 2001, the licensee shall update the UFSAR to include the UFSAR supplement submitted pursuant to 10 CFR 54.21(d) as revised on March 27, 2000. Until the UFSAR update is complete, the licensee may make changes to the programs described in its UFSAR supplement without prior Commission approval, provided that the licensee evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

G. The licensee's UFSAR supplement submitted pursuant to 10 CFR 54.21(d), as revised on March 27, 2000, describes certain future inspection activities to be completed before the period of extended operation. The licensee shall complete these activities no later than February 6, 2013.

6. To increase the possibility of achieving greater reliability and economy of electric generation and transmission facilities, applicant will discuss load projections and system development plans with any neighboring entity(ies).

7. When applicant's plans for future nuclear generating units (for which application will hereafter be made to the Nuclear Regulatory Commission) have reached the stage of serious planning, but before firm decisions have been made as to the size and desired completion date of the proposed nuclear units, applicant will notify all neighboring entities, including distribution systems with peak loads smaller than applicant's, that applicant plans to construct such nuclear units. Neither the timing nor the information provided need be such as to jeopardize obtaining the required site at the lowest possible cost.

8. The foregoing commitments shall be implemented in a manner consistent with the provisions of the Federal Power Act and all other lawful local, State and Federal regulation and authority. Nothing in these commitments is intended to determine in advance the resolution of issues which are properly raised at the Federal Energy Regulatory Commission concerning such commitments, including allocation of costs or the rates to be charged. Applicant will negotiate (including the execution of a contingent statement of intent) with respect to the foregoing commitments with any neighboring entity including distribution systems where applicable engaging in or proposing to engage in bulk power supply transactions, but applicant shall not be required to enter into any final arrangement prior to resolution of any substantial questions as to the lawful authority of an entity to engage in the transactions. In addition, applicant shall not be obligated to enter into a given bulk power supply transaction if: (1) to do so would violate, or incapacitate it from performing any existing lawful contract it has with a third party; (2) there is contemporaneously available to it, a competing or alternative arrangement which affords it greater benefits which would be mutually exclusive of such arrangement; (3) to do so would adversely affect its system operations or the reliability of power supply to its customers; or (4) if to do so would jeopardize applicant's ability to finance or construct on reasonable terms facilities needed to meet its own anticipated system requirements.

D. Fire Protection

Duke Energy Carolinas, LLC shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c) as specified in safety evaluation report dated April 28, 1983 and in the license amendment request dated _____ and as approved in the safety evaluation report dated _____ (and supplements dated _____). The licensee may make changes to the fire protection program without prior approval of the Commission if those changes satisfy the provisions set forth in 10 CFR 50.48(a), 10 CFR 50.48(c), and the following:

(a) Prior NRC review and approval is not required for a change that results in a net decrease in risk for both CDF and LERF. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. The change may be implemented following completion of the change evaluation. Change reports need not be submitted to the NRC for these changes.

(b) Prior NRC review and approval is not required if the change results in a net calculated risk increase less than 1E-7/yr for CDF and less than 1E-8/yr for LERF. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. The change may be implemented following completion of the change evaluation. Change reports need not be submitted to the NRC for these changes.

(c) Where the calculated plant change risk increase is <1E-6/yr, but ≥1E-7/yr for CDF or <1E-7/yr, but ≥1E-8/yr for LERF, the licensee must submit a summary description of the change to the NRC following completion of the change evaluation. The proposed change also must be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. If the NRC does not object to the change within 90 days, the licensee may proceed with implementation of the proposed change.

Duke Energy Carolinas, LLC may perform change evaluations for deviations from the codes, standards, and listings referenced in NFPA 805, without a 10 CFR 50.90 submittal, as long as the specific requirement for the feature is not included in NFPA 805 Chapter 3, and the NFPA 805 change process is used.

E. Physical Protection

Duke Energy Carolinas, LLC shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contains safeguards information protected under 10 CFR 73.21, is entitled: "Duke Energy Physical Security Plan" submitted by letter dated September 8, 2004, and supplemented on September 30, 2004, October 15, 2004, October 21, 2004, and October 27, 2004.

F. In the update to the UFSAR required pursuant to 10 CFR 50.71(e)(4) scheduled for July, 2001, the licensee shall update the UFSAR to include the UFSAR supplement submitted pursuant to 10 CFR 54.21(d) as revised on March 27, 2000. Until the UFSAR update is complete, the licensee may make changes to the programs described in its UFSAR supplement without prior Commission approval, provided that the licensee evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

G. The licensee's UFSAR supplement submitted pursuant to 10 CFR 54.21(d), as revised on March 27, 2000, describes certain future inspection activities to be completed before the period of extended operation. The licensee shall complete these activities no later than February 6, 2013.

5.0 ADMINISTRATIVE CONTROLS

5.4 Procedures

5.4.1 Written procedures shall be established, implemented, and maintained covering the following activities:

a. The applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978;

b. The emergency operating procedures required to implement the requirements of NUREG-0737 and NUREG-0737, Supplement 1, as stated in Generic Letter 82-33;

c. Quality assurance for effluent and environmental monitoring; and

d. All programs specified in Specification 5.5.

B 3.10 STANDBY SHUTDOWN FACILITY

B 3.10.1 Standby Shutdown Facility (SSF)

BASES

BACKGROUND

The Standby Shutdown Facility (SSF) is designed as a standby system for use under certain emergency conditions. The system provides additional "defense in-depth" protection for the health and safety of the public by serving as a backup to existing safety systems. The SSF is provided as an alternate means to achieve and maintain the unit in MODE 3 with average RCS temperature $\geq 525^{\circ}F$ (unless the initiating event causes the unit to be driven to a lower temperature) following 10 CFR 50.48(c) fire, sabotage, turbine building flood, station blackout (SBO) and tornado missile events, and is designed in accordance with criteria associated with these events. In that the SSF is a backup to existing safety systems, the single failure criterion is not required. Failures in the SSF systems will not cause failures or inadvertent operations in other plant systems. The SSF requires manual activation and can be activated if emergency systems are not available.

The SSF is designed to maintain the reactor in a safe shutdown condition for a period of 72 hours following 10 CFR 50.48(c) fire, turbine building flood, sabotage, SBO, or tornado missile events. This is accomplished by re-establishing and maintaining Reactor Coolant Pump Seal cooling; assuring natural circulation and core cooling by maintaining the primary coolant system filled to a sufficient level in the pressurizer while maintaining sufficient secondary side cooling water; and maintaining the reactor subcritical by isolating all sources of Reactor Coolant System (RCS) addition except for the Reactor Coolant Makeup System which supplies makeup of a sufficient boron concentration.

The main components of the SSF are the SSF Auxiliary Service Water (ASW) System, SSF Portable Pumping System, SSF Reactor Coolant (RC) Makeup System, SSF Power System, and SSF Instrumentation.

The SSF ASW System is a high head, high volume system designed to provide sufficient steam generator (SG) inventory for adequate decay heat removal for three units during a loss of normal AC power in conjunction with the loss of the normal and emergency feedwater systems. One motor driven SSF ASW pump, located in the SSF, serves all three units. The SSF ASW pump, two HVAC service water pumps, and the Diesel Service Water (DSW) pump share a common suction supply of lake water from the embedded Unit 2 condenser circulating water (CCW) piping. The SSF DSW pump and an HVAC pump must be operable in order to satisfy the operability requirements for the Power System. (Only one HVAC service water pump is required to be operable

B 3.10 STANDBY SHUTDOWN FACILITY

B 3.10.2 Standby Shutdown Facility (SSF) Battery Cell Parameters

BASES

BACKGROUND

This LCO delineates the limits on electrolyte temperature level, float voltage, and specific gravity for the SSF Power System batteries. A discussion of these batteries and their OPERABILITY requirements is provided in the Bases for LCO 3.10.1, "Standby Shutdown Facility (SSF)."

APPLICABLE SAFETY ANALYSES

The SSF serves as a backup for existing safety systems to provide an alternate and independent means to achieve and maintain one, two, or three Oconee units in MODE 3 with average RCS temperature ≥ 525°F (unless the initiating event causes the unit to be driven to a lower temperature) for up to 72 hours following a 10 CFR 50.48(c) fire event, a turbine building flood, sabotage, SBO, or tornado missile events (Refs. 1, 5, 6, and 7).

The OPERABILITY of the SSF DC system is consistent with the assumptions of the Oconee Probabilistic Risk Assessment (Ref. 2). Therefore, the SSF battery cell parameters satisfy Criterion 4 of 10 CFR 50.36 (Ref. 3).

LCO

The SSF Battery cell parameters must remain within acceptable limits to ensure availability of the required SSF Power System DC power to shut down the reactor and maintain it in a safe condition after a 10 CFR 50.48(c) fire, turbine building flood, sabotage, SBO, or tornado missile events. Electrolyte limits are conservatively established, allowing continued DC electrical system function even with Category A and B limits not met.

APPLICABILITY

The SSF battery cell parameters are required solely for the support of the associated SSF power system battery. Therefore, battery cell parameters are only required to be met when the SSF DC power source is required to be OPERABLE. Refer to the Applicability discussion in Bases for LCO 3.10.1.

Duke Energy Carolinas, LLC
Oconee Nuclear Site, Units 1, 2, and 3
License Amendment Request to Adopt NFPA-805, "Performance-Based Standard for Fire Protection for Light Water Reactor Generating Plants"

ENCLOSURE 5

Open Item Summary

Has been redacted and withheld as security-related information under 10 CFR 2.390

ENCLOSURE 6

LIST OF REGULATORY COMMITMENTS

Enclosure 6
List of Regulatory Commitments

The following table identifies the regulatory commitments in this document. Any other statements in this submittal represent intended or planned actions. They are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	DATE DUE
Provide a project milestone schedule for the following activities by June 30, 2008: ▪ The MSO treatment, Change Evaluations and the determination of the additional risk presented by the use of recovery actions as a compliance strategy. ▪ The Unit 1 Fire PRA screening analysis. ▪ The Unit 2 Fire PRA. ▪ The modifications necessary to support the new LB. ▪ An UFSAR example. ▪ The NPO Modes transition evaluation. ▪ A schedule for the completion of the transition to the new fire protection LB	June 30, 2008