# REQUEST FOR ADDITIONAL INFORMATION
# LICENSE AMENDMENT REQUEST TO ADOPT
# NATIONAL FIRE PROTECTION ASSOCIATION STANDARD 805
# PERFORMANCE-BASED STANDARD FOR FIRE PROTECTION FOR LIGHT WATER REACTOR GENERATING PLANTS
# DONALD C. COOK NUCLEAR PLANT UNITS 1 AND 2
(TAC NOS. ME6629 AND ME6630)

Office of Nuclear Reactor Regulation
Division of Risk Assessment
Fire Protection Branch

## RAI-05.01 Fire Protection Engineering

In a letter dated April 27, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML121320595, Non-Publicly Available), the licensee responded to request for additional information (RAI)-05 by stating the following:

"Existing [Fire Protection Program (FPP)] surveillance, test and inspections will remain consistent with applicable [Donald C. Cook Nuclear Power Plant, Units 1 and 2 (CNP)] [Technical Requirements Manual (TRM)], Insurer, and [National Fire Protection Association Standard 805 (NFPA 805)] requirements. The intent is to obtain approval via the transition Safety Evaluation (SE) to use the [Electric Power Research Institute (EPRI) Topical Report (TR)] 1006756 guideline in the future as opportunities arise. [Indiana Michigan Power Company (I&M)] plans to evaluate CNP FPP features with the intent of using the EPRI performance based methods to provide evidence of equipment performance beyond that achievable under traditional prescriptive maintenance practices to ensure optimal use of resources while maintaining reliability."

The Nuclear Regulatory Commission (NRC) staff considers this response unacceptable. Title 10 of the *Code of Federal Regulations* (10 CFR) 50.48(c)(2)(vii) states that "...the fire protection program elements and minimum design requirements of Chapter 3 may be subject to the performance-based methods permitted elsewhere in the standard. Licensees who wish to use performance-based methods for these fire protection program elements and minimum design requirements shall submit a request in the form of an application for license amendment under §50.90."

Adjusting the frequency of inspection, tests and maintenance activities required by NFPA 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, 2001 Edition," Section 3.2.3 using a performance-based approach such as EPRI Technical Report 1006756, "Fire Protection Surveillance Optimization and Maintenance Guide for Fire Protection Systems and Features," constitutes the use of a "performance-based method permitted elsewhere in the standard." If a licensee desires to implement performance-based changes using EPRI TR 1006756 (or other performance-based method) to required inspection, tests and maintenance activities, the change should be requested in accordance with 10 CFR 50.48(c)(2)(vii) and proper justification provided.

**RAI-09.01 Fire Protection Engineering**

There are two areas of major concern to the NRC staff. In a letter dated April 27, 2012 (ADAMS Accession No. ML121320595), the licensee responded to RAI-09. Based on the response to RAI-09 and Table B-1 of the license amendment request (LAR), the response introduces the use of video cameras in lieu of a fire watch for hot work operations and the ability to use a single fire watch for multiple hot work activities. The RAI response and LAR Table B-1 indicate that these are only clarifications but remain in compliance with NFPA 805, Section 3.3.1.3.1.

NFPA 805, Section 3.3.1.3.1, states that a hot work safety procedure shall be developed, implemented, and periodically updated as necessary in accordance with NFPA 51B, "Standard for Fire Prevention During Welding, Cutting, and Other Hot Work", and NFPA 241, "Standard for Safeguarding Construction, Alteration, and Demolition Operations."

However, there is no exception for the use of video cameras, as equivalent to a hot work fire watch, identified in these standards. Additionally, there is no exception for the practice of a single fire watch managing multiple hot work locations identified in these standards. These practices represent new and significant changes from the standards; therefore, the NRC staff does not accept these practices as suitable clarifications to NFPA 805, Section 3.3.1.3, "Control of Ignition Sources". In addition, the NRC staff does not currently accept these practices as providing an equivalent means of compliance with NFPA 805, NFPA 241, or NFPA 51B.

Provide a new compliance statement and compliance strategy that will satisfy the requirements of NFPA 805, Section 3.3.1.3.1.

**RAI-10.01 Fire Protection Engineering**

In a letter dated April 27, 2012 (ADAMS Accession No. ML121320595), the licensee responded to RAI-10. Based on this response and Table B-1 of the LAR:

LAR, Table B-1, Section 3.3.1.2(1)'s Compliance Basis states that, "Alternative protection methods" may include "for short durations, covering the material [untreated wood] with a fire retardant cloth." However, NFPA 805, Section 3.3.1.2(1), requires that wood be treated. There is no exception allowed for the covering of untreated wood.

However, the response states that the licensee would be in compliance with Section 3.3.1.2(1) since NFPA 805 3.3.1.2(2) allows plastic sheeting material as long as the material passes NFPA Standard 701, "Standard Methods of Fire Tests for Flame Propagation of Textiles and Films," then the use of a qualified sheeting material that has passed NFPA 701 would therefore meet the untreated wood requirements of 3.3.1.2(1). NFPA 805 does not allow the practice of covering untreated wood with plastic or cloth sheeting, regardless if the sheeting has passed NFPA 701.

Provide a new compliance statement and compliance strategy that will satisfy the requirements of NFPA 805, Section 3.3.1.2(1).

**RAI-11.01 Fire Protection Engineering**

In a letter dated April 27, 2012 (ADAMS Accession No. ML121320595), the licensee responded to RAI-11. Based on the response to RAI-11 and Attachment L of the LAR, address the following:

a. According to Attachment L of the LAR, the largest design demand of any sprinkler or fixed water spray system in the power block is the Unit 2 transformer sprinkler system, which requires less than 3,200 gallons per minute (gpm). A 500 gpm fire hose allowance results in a total maximum fire protection flow demand of less than 3,700 gpm. However the response to RAI-11 indicates that the 3,700 gpm (which includes 500 gpm for hose stream) required for the Unit 1 main transformer and turbine building wall protection is the worst case demand fire water deluge suppression system. Clarify this apparent discrepancy.

b. There are two non-fire water demands placed on the fire protection system, which are the security diesel generator jacket water coolers and main feed pump condenser tubesheet cleaning which totals a maximum of 340 gpm. Attachment L of the LAR indicates that the fire water system has excess capacity to supply the combined demands of automatic and manual water-based fire suppression systems and non-fire protection uses in the event of a fire. Provide confirmation that adequate excess capacity exists at the required system pressures.

**<u>RAI-17.01 Safe Shutdown</u>**

In a letter dated April 27, 2012 (ADAMS Accession No. ML121320595), the licensee responded to RAI-17. The response to RAI-17 did not address how the Unit 1/Unit 2 cross-connect actions are reflected in the feasibility analysis that is required by NFPA 805 for recovery actions (RAs). Confirm that the RAs associated with cross-connecting Unit 1 and Unit 2 systems are included in the feasibility analysis.

**<u>RAI-18.01 Safe Shutdown</u>**

In a letter dated April 27, 2012 (ADAMS Accession No. ML121320595), the licensee responded to RAI-18. Based on that response and Attachment G - Table G-1 of the LAR, RAs for Variances from Deterministic Requirements (VFDRs) [ ] require establishing temporary ventilation to Unit 1 and Unit 2 control rooms by opening the doors and installing a portable blower. This portable blower is powered by a gasoline engine that requires periodic refueling. A 3-hour supply of fuel is maintained with the blower.

The requirements of General Design Criterion 3 (GDC-3) state for fire protection that structures, systems, and components important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions. Noncombustible and heat resistant materials shall be used wherever practical throughout the unit, particularly in locations such as the containment and control room. Fire detection and fighting systems of appropriate capacity and capability shall be provided and designed to minimize the adverse effects of fires on structures, systems, and components important to safety. Firefighting systems shall be designed to assure that their rupture or inadvertent operation does not significantly impair the safety capability of these structures, systems, and components. The use of gasoline near the control room does not align with the requirements of GDC-3 to provide fire protection of structures, systems and components important to safety.

The use and refueling of a portable gas-powered blower presents a hazard to equipment important to nuclear safety that is similar to the hazard of portable fuel-fired heaters, which are prohibited by NFPA 805, Section 3.3.1.3.4. Consistent with the prohibition on portable fuel-fired heaters, portable fuel-fired ventilation should not be used in plant areas containing equipment important to nuclear safety or where there is a potential for radiological releases resulting from a fire.

Provide an alternative approach to resolving the subject VFDRs and providing Control Room ventilation that is consistent with the requirements of GDC-3 and the prohibition on portable fuel-fired heaters in NFPA 805, Section 3.3.1.3.4.

**RAI-19.01 Safe Shutdown**

In a letter dated April 27, 2012 (ADAMS Accession No. ML121320595), the licensee responded to RAI-19 stating that the most restrictive time for alignment of charging is 40-minutes, and also stated that the cross-tie is defense-in-depth (DID) and would not take place for 24-hours allowing for restoration of the valve.

Clarify the timing for operation of the valves that are directly exposed to fire. Describe which statement is correct, 40 minutes or 24 hours, and describe the basis of the time (describe what plant condition requires the action and what plant impact would there be if the action failed).

Response 3, under "Rising Stem Valve Assessment", states, "the defense in depth action would not take place for at least 24 hours following the fire,..."

Attachment C states that a DID RA is credited, but Attachment G does not distinguish between RAs and DID RAs. Describe what the DID action is, and explain why it is referred to as DID.

**RAI-40 Probabilistic Risk Assessment**

Transient fires should at a minimum be placed in locations within the plant physical access units (PAUs) where conditional core damage probabilities (CCDPs) are highest for that PAU, (i.e., at "pinch points"). Pinch points include locations of redundant trains or the vicinity of other potentially risk-relevant equipment, including the cabling associated with each. From discussions at the second audit, the NRC staff determined that floor space beneath obstructions such as cable trays two feet or less off the ground were considered inaccessible. However, based on the walkdowns during the audit, the staff determined that it is possible to place smaller transients in some of these spaces.

Transient fires should be placed at all appropriate locations in a PAU where they can threaten pinch points. Hot work should be assumed to occur in locations where hot work is a possibility, even if improbable (but not impossible), keeping in mind the same philosophy.

a. Describe how transient and hot work fires are distributed within the PAUs.

b. If there are areas within a PAU where no transient or hot work fires are located since those areas are considered inaccessible, describe the criteria used to define "inaccessible." Note that an inaccessible area is not the same as a location where fire is simply unlikely, even if highly improbable.

c. If there are "inaccessible" locations where hot work or transient fires are improbable but not impossible, and these locations are pinch points, provide a sensitivity study to determine the possible risk increase reflecting the possible size and frequency of fires in these locations.

**RAI-41 Probabilistic Risk Assessment**

Describe how fire-induced instrument failure (including no readings, off-scale readings, and incorrect/misleading readings) is addressed in the fire human reliability analysis.

**RAI-42 Probabilistic Risk Assessment**

Deleted.

**RAI-43 Probabilistic Risk Assessment**

Identify if any VFDRs in the LAR involved performance-based evaluations of wrapped or embedded cables. If applicable, describe how wrapped or embedded cables were modeled in the fire probabilistic risk assessment (FPRA) including assumptions and insights on how the PRA modeling of these cables contributes to the VFDR delta-risk evaluations.

**RAI-44 Probabilistic Risk Assessment**

Identify any plant modifications (implementation item) in Attachment S of the LAR that have not been completed but which have been credited directly or indirectly in the change-in-risk estimates provided in Attachment W. When the effects of a plant modification have been included in the PRA before the modification has been completed, the models and values used in the PRA are necessarily estimates based on current plans. The as-built facility after the modification is completed may be different than the plans. Add an implementation item that, upon completion of all PRA credited implementation items, verifies the validity of the reported change-in-risk. This item should include your plan of action should the as-built change-in-risk exceed the estimates reported in the LAR.

**RAI-45 Probabilistic Risk Assessment**

Identify any changes made to the internal events PRA or FPRA since the last full-scope peer review of each of these PRA models that are consistent with the definition of a "PRA upgrade" in ASME/ANS-RA-Sa-2009, "Standard for Level 1/Large Early Release Frequency for Nuclear Power Plant Applications," as endorsed by Regulatory Guide 1.200. Also, address the following:

a. If any changes are characterized as a PRA upgrade, indicate if a focused-scope peer review was performed for these changes consistent with the guidance in ASME/ANS-RA-Sa-2009, as endorsed by Regulatory Guide 1.200, and describe any findings from that focused-scope peer review and the resolution of these findings.

b. If a focused-scope peer review has not been performed for changes characterized as a PRA upgrade, describe what actions will be implemented to address this review deficiency.

**RAI-46 Fire Modeling**

Frequently asked question (FAQ)-52 (ADAMS Accession No. ML092120501) provides guidance of 8 minutes to reach the peak heat release rate (HRR) for a transient combustible fire. Calculation JEL1-Cook09-01, Rev. 0, assumes 10 minutes to reach the peak HRR for transient combustibles. Provide justification for the number assumed.

**RAI-47 Fire Modeling**

Engineering judgment was credited for the assumption that transient combustibles need not be considered in the main control room (MCR) back panel area. Provide detailed justification for this assumption. More specifically, explain why scenarios with high CCDP involving transient combustibles in the MCR back panel area can be ignored.

**RAI-48 Fire Modeling**

Calculation JEL1-Cook09-01, Rev. 0, considers only the normal MCR ventilation recirculation mode and no forced ventilation modes of operation. Explain why the analysis does not include or discuss the MCR purge mode of operation. Discuss the analysis results if the MCR ventilation is operated in the purge mode.

**RAI-49 Fire Modeling**

Calculation JEL1-Cook09-01, Rev. 0, assumes MCR control boards do not extend to the top of the suspended ceiling. Field inspection determined the existing gaps are minimal.

Provide justification for not using separate partitioned areas or obstructions in the MCR for Consolidated Model of Fire and Smoke Transport (CFAST) fire modeling purposes.

Also provide physical dimensions (calculation inputs) for MCR control boards, panels, partitions, etc.

Provide an electronic copy of the fire modeling input files as applicable.

**RAI-50 Fire Modeling**

Explain why Calculation JEL1-Cook09-01, Rev. 0, uses the default value in CFAST "begin drop off" and "zero flow" pressures versus the actual CNP specific vendor specified fan pressure drop.

**RAI-51 Fire Modeling**

Provide justification for the fact that Calculation JEL1-Cook09-01, Rev. 0, references NUREG/CR-6850, "EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities," Table E-5 for HRRs for closed door cabinets with unqualified cables, (versus using HRRs for open cabinets with qualified or unqualified cables). Provide justification for cable qualification. Provide an electronic copy of the fire modeling input files as applicable.

**RAI-52 Fire Modeling**

Calculation JEL1-Cook09-01, Rev. 0, Section 2, Assumption (i), states "Cabinet fire propagation to adjacent cabinets occurs after 10 minutes. This is based on the assumption the cabinets are separated by a single metal wall and with cables in the adjacent cabinet in direct contact with the separating wall." Field inspection revealed the single metal partitions between cabinets had openings (e.g., gaps) allowing exposure between cabinets. In light of the field observation, provide a basis for Assumption (i).

**RAI-53 Fire Modeling**

The detailed fire modeling evaluation raised the following questions regarding the acceptability of the fire dynamics tools (FDTs) for zone of influence (ZOI) calculations:

The NRC staff performed independent fire modeling calculations using the FDTs, specifically for selected fire scenarios in fire areas [ ], Unit 1 safeguard systems and motor control center room and [ ], Unit 2 switchgear room cable vault and auxiliary cable vault.

a. For each fire scenario calculation in Attachment 6 of R1900-0411-[ ], fire modeling report, Rev. 0, the ZOI dimensions for plume, plume radius and ceiling jet are identical for the thermoset and thermoplastic damage criteria. Explain this apparent error and describe its impact on the conclusions of the analysis for fire area [ ].

b. The independent flame height calculation for fire scenario [ ] matches that reported in Attachment 6 of R1900-0411-[ ]. However, for fire scenario [ ], the independent flame height calculation does not agree with the calculation reported in Attachment 6 of R1900-0411-[ ]. The primary difference between the fire scenarios appears to be the location factor, (i.e., one for [ ], versus two for [ ]. Justify the location factor used in fire scenario [ ]. Explain in detail how the flame height is calculated for fire scenarios with a location factor of 2 or 4.

c. The NRC staff was not able to reproduce the detector activation time shown on page 108 (pdf page count) of Attachment 9 of R1900-0411-[ ]. Explain in detail how this detector activation time was obtained.

**RAI-54 Fire Modeling**

The detailed fire modeling evaluation raised the following questions regarding the acceptability of fire dynamics simulator (FDS) for ZOI and hot gas layer (HGL) calculations:

Independent fire modeling calculations were performed using FDS, specifically for selected fire scenarios in fire areas [ ], Unit 2 safeguard systems and motor control center room, [ ], Unit 2 emergency power supply area, and [ ], Unit 1 control room heating ventilation and air conditioning equipment and computer areas.

a. The FDS calculations performed for fire areas [ ] include fire dampers that are supposed to close when the fusible link of the damper reaches a specified temperature. However, in the input files provided to the NRC staff for the non-ventilated cases in these two areas, the damper sequence appears to be reversed, (i.e., the dampers are initially closed and they open when the specified fusible link temperature is reached.)

   Repeat the simulations for the non-ventilated cases with the correct damper activation settings and describe how the reversed damper sequence affects the conclusions of the analysis.

b. In the detailed fire modeling report for fire area [ ] it is stated that the results of the FDS simulations show that the HGL extends a minimal distance beyond the calculated ZOI and that, therefore, whole room burnout is not achieved. The conclusion that the HGL does not significantly extend the ZOI is illustrated in the detailed fire modeling report with smokeview images of the gas temperature distribution in a horizontal slice plane at some distance below the ceiling.

However, smokeview images of the gas temperature distribution in a vertical slice plane based on the NRC staff's independent FDS runs show that the HGL for the non-ventilated cases seems to extend well beyond the ZOI calculated by the FDTs for a relatively long time. Perform a qualitative FPRA assessment using the ZOI created by the non-ventilated FDS analysis. The response should address fire area [ ] also.

c. In a letter dated April 27, 2012 (ADAMS Accession No. ML121320595), the licensee responded to RAI-04(c) and provided a justification for the use of a grid size that is outside the validated range in the FDS analyses of fire areas [ ]. However, when examining the FDS input files for these areas, the NRC staff noted that a grid size of 0.2 meters (m) was used, which is within the validated range, based on the associated fire sizes for the different scenarios.

   Table 1 in Attachment 10 to Rev. 1 of the [ ] Detailed Fire Modeling Report indicates that for all scenarios a grid spacing of 0.2 m was used for mesh 1 and 0.4 m for mesh 2-4. However, the FDS input files reviewed by the NRC staff specify a spacing of 0.2 m for mesh 1 and 4 and 0.4 m for mesh 2 and 3 for the scenarios with forced ventilation, and a grid spacing of 0.2 m throughout for the scenarios without forced ventilation (see table below). Note: This is not an issue for area [ ] because the grid spacing of 0.2 m throughout the compartment specified in the input files is consistent with what is in the report.

| | Mesh 1 | Mesh 2 | Mesh 3 | Mesh 4 | |
|---|---|---|---|---|---|
| Detailed Fire Modeling Report<br>Table 1, Attachment 10 | 0.2 | 0.4 | 0.4 | 0.4 | All Scenarios |
| | | | | | |
| FDS Input Files | 0.2 | 0.4 | 0.4 | 0.2 | Forced Ventilation |
| FDS Input Files | 0.2 | 0.2 | 0.2 | 0.2 | Without Forced Ventilation |

   Confirm that the correct FDS input files were provided. If the FDS input files provided are incorrect, provide the correct files. Determine and explain the effect of the discrepancies in grid spacing in the report vs. the FDS input files on the results and conclusions of the analyses for area [ ]. Fire area [ ] should also be included in the response.

d. The FDS input files provided for fire areas [ ] have a simulation time of 5100 seconds (s). However, detailed fire modeling reports for these two areas state that the simulation times were 2010 and 3600 s, respectively.

   Confirm that the correct FDS files were provided and explain the discrepancy between the simulation times in the input files and those in the detailed fire modeling reports.

e. The detailed fire modeling reports of several fire areas (e.g., [ ]) refer to the maximum expected fire scenario (MEFS) and the limiting fire scenario (LFS).

The terms MEFS and LFS are typically used when fire modeling is performed to support performance-based evaluations in accordance with NFPA 805, Section 4.2.4.1. However, Section 4.5.1.2 in the LAR states that "Fire modeling was performed as part of the FPRA development (NFPA 805 Section 4.2.4.2)." Confirm that this statement in the LAR is correct and that no fire modeling was performed to support compliance with NFPA 805, Section 4.2.4.1.

Explain and justify: (1) the intended use and definition of the terms MEFS and LFS in this capacity, which appear to differ from how these terms are used and defined in NFPA 805 Section 4.2.4.1; and (2) how these terms were applied with regard to detailed fire modeling in support of the FPRA. For example, a 98th or 100th percentile fire scenario in accordance with NFPA 805 Section 4.2.4.2 might be used to serve a similar purpose to the MEFS in accordance with NFPA 805 Section 4.2.4.1.

f. In the detailed fire modeling report for fire area [ ], temperature slice file images are shown for each fire scenario at approximately 1200 seconds (approximate time to peak HRR), with the exception of the scenario with a peak HRR of 1470 kW and forced ventilation. For this scenario, a slice file image is shown at 120 seconds.

   Explain why 120 seconds was chosen for the slice file image and if this time was chosen in error, how that affects the conclusions of the analysis.

g. The ZOI for the scenario with a peak HRR of 1470 kW and forced ventilation in fire area [ ] at 120 seconds is different from the ZOI of the same scenario at 1200 seconds. In addition, both ZOIs are smaller than the maximum ZOI observed during the simulation, which occurs at approximately 1400 s.

   Explain whether the slice file images in the detailed fire modeling report are intended to show the maximum ZOI and if not, how the time of the displayed slice file image was chosen. Finally, explain how the time to reach the maximum ZOI is factored into the analysis.

h. The NRC staff noted that the configuration in the FDS input files for fire area [ ] provided during the second visit is different from that shown in Figure A7-1 of the detailed fire modeling report for [ ] (zones 72 and 73 are missing).

   Provide additional information to explain the difference in the configurations between the input files received and the analysis described in the detailed fire modeling report for fire area [ ].

i. The NRC staff noted that the LATCH parameter for the dampers between zones 70 and 71 in fire area [ ] was set to FALSE (default is TRUE) in the FDS input files for the scenarios with forced ventilation. In the independent fire modeling runs of the input files provided to the staff, this caused the dampers to repeatedly open and close late in the simulations. It appears that the resulting damper oscillation occurred at simulations times greater than what was considered in the analysis.

   Explain why the LATCH parameter was set to FALSE and justify why the damper oscillation did not affect the conclusions of the analysis.

**RAI-55 Fire Modeling**

During the process of independent fire modeling, the NRC staff observed that the software package Pyrosim was used to build the FDS input files. Provide technical documentation to demonstrate that Pyrosim has been verified to build the FDS input files correctly.

**RAI-56 Fire Protection Engineering**

LAR Table I-1: Power Block Definition lists power block structures for the purpose of defining NFPA 805 applicability in accordance with the definitions and methodology of NEI 04-02, "Guidance for Implementing A Risk-Informed, Performance-Based Fire Protection Program Under 10 CFR 50.48(c)," Rev. 2, Section K, and FAQ-0019 (ADAMS Accession No. ML080510224). YARD is identified as one of the structures listed in Table I-1. The Table I-1 footnote for YARD indicates examples of structures in the power block. Within Table I-1, identify the specific structures in the YARD that are part of the power block such as the intake structure, pump houses, duct banks, warehouses, and other significant structures containing equipment required for operations. Ensure those structures listed within the FAQ are accounted for as either within or not within the power block.

**RAI-57 Fire Protection Engineering**

NFPA 805, Section 3.3.12 provides requirements for reactor coolant pump (RCP) oil collection. Section 3.3.12.(2) addresses the capacity requirements of the leakage collection system and requires the collection container to hold the inventory of the RCP lube oil system. The compliance statement in LAR Attachment A (Table B-1) states that 3.3.12.(2) "Complies by Previous NRC Approval." The basis for the previous NRC approval is a SE for a licensee exemption request from the requirements of 10 CFR 50, Appendix R, Section III.O, "Oil collection system for reactor coolant pump." LAR Section 4.2.3 and Attachment K, indicate that this exemption request is to be transitioned; however, the discussion in LAR Attachment K, refers to the applicability of NFPA 805, Section 3.3.12.(5). Section 3.3.12.(5) of NFPA 805 addresses collection basin drain line sizing and does not address oil collection system capacity. Determine and clarify the applicability of NFPA 805 Section 3.3.12.(2) and Section 3.3.12.(5) with regard to the licensing action described in Attachment K that is associated with Exemption 7.15.

**RAI-58 Fire Protection Engineering**

Fire protection systems and features that require NFPA code compliance are reflected in NFPA 805 Chapter 3. Code Compliance Evaluations, Fire Protection Program Manual, and System Descriptions referenced in Table B-1, appear to identify the NFPA codes of record for the plant, but it is unclear as to which codes will apply post NFPA 805 transition, and which appear in the current licensing basis from Appendix A of Branch Technical Position 9.5.1.

Provide a complete list of committed NFPA codes with editions identified that will be in place post transition. For those codes with numerous editions, identify which plant areas and systems apply to which editions.

**RAI-59 Fire Protection Engineering**

There appears to be inconsistencies between different sections of the LAR; there isn't agreement between Table B-1, Attachment E and Attachment S.

Some examples:

Table B-1, Sections 3.3.1.2 Control of Combustibles,
3.3.1.3.1 Control of Ignition Sources,
3.4.2 Fire Pre-Plans,
3.2.3 Procedures

Each of these are affected by implementation items listed in Attachment S but do not reflect the compliance category "complies with required action."

There are Attachment S implementation items for Attachment E (Rad Release) S-3.7, documents and procedure updates S-3.10, Transient Free Zones S-3.3, and Hot Work Restrictions S-3.4 that are not reflected in Table B-1.

a. Clarify that these selected Table B-1 sections "comply with required action" as appropriate.

b. Perform an extent of condition review to identify all situations where implementation items are identified and ensure that the appropriate compliance strategy ("complies with required action") is reflected as required in the transition report B-1 Table.

**RAI-60 Programmatic**

Section 2.7.3, Quality, of NFPA 805 has the following specific requirements:

2.7.3.1: Each analysis, calculation, or evaluation performed shall be independently reviewed.

2.7.3.2: Each calculational model or numerical method used shall be verified and validated through comparison to test results or comparison to other acceptable models.

2.7.3.3: Acceptable engineering methods and numerical models shall only be used for applications to the extent these methods have been subject to verification and validation. These engineering methods shall only be applied within the scope, limitations, and assumptions prescribed for that method.

2.7.3.4: Cognizant personnel who use and apply engineering analysis and numerical models (e.g., fire modeling techniques) shall be competent in that field and experienced in the application of these methods as they relate to nuclear power plants, nuclear power plant fire protection, and power plant operations.

2.7.3.5: An uncertainty analysis shall be performed to provide reasonable assurance that the performance criteria have been met.

Section 4.7.3 of the LAR states that updates to the Fire Protection Quality Assurance Program will reflect the requirements of NFPA 805 Section 2.7.3. This section of the LAR also states that the requirements of NFPA Sections 2.7.3.1 through 2.7.3.4.5 were followed for analyses supporting the transition to NFPA 805.

There is no specific commitment in the LAR indicating compliance with the requirements of NFPA 805 Section 2.7.3 when conducting future analyses under an NFPA 805 fire protection program.

Provide a specific commitment that the requirements of NFPA 805 Section 2.7.3 will be complied with for all future analyses supporting the NFPA 805 fire protection program.