



# FNP Fundamental FP Program LAR Submittal Overview

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Tuesday March 19, 2013

# Purpose and Methodology

- Purpose
  - The purpose of the Fundamental Fire Protection Program review is to compare the FNP fire protection program to the requirements of NFPA 805 Chapter 3.
- Methodology
  - The comparison utilized the guidance contained in NEI 04-02 Section 4.3.1 and Appendix B-1 in addition to lessons learned from the pilot plants and non-pilot plant information available at the time of the review.

# Results

- The vast majority of Chapter 3 elements Comply or Comply via Engineering Evaluation
- There is one (1) instance where FNP utilized compliance via previous NRC approval (Section 3.6.4)
- There are no instances where a clarification of a prior NRC approval is required
- There are five (5) NRC Approval Requests (License Amendment Required)
- There is one modification identified (Section 3.8.1 & 3.8.2)
- There are eighteen (18) items for implementation identified

# License Amendment Required

## Details

- The five Chapter 3 sections for which FNP is requesting NRC Approval are:
  - 3.3.5.1 Existing Wiring Above Suspended Ceiling
  - 3.3.5.2 Use of Plastic Embedded Conduit
  - 3.3.12(1) Oil Misting
  - 3.5.15 Hydrant Spacing
  - 3.5.16 Non-Fire uses of the Fire Water System
- These requests are further documented in LAR Attachment L

# Modifications and Implementation Items

- There is one modification to upgrade the fire alarm/detection system into compliance with NFPA 72
- There are eighteen (18) implementation items primarily related to update of station documentation to ensure compliance with Chapter 3 requirements

# Conclusions

- Full compliance with NFPA 805 Chapter 3 Requirements is achieved by:
  - Maintaining the program as defined in the review
  - Completion of implementation items to update documentation to support compliance with the NFPA 805 Chapter 3 requirements
  - Completion of the modification to the fire alarm system to support compliance NFPA 805 Chapter 3 requirements
  - NRC approval of items requested in Attachment L of the License Amendment Request
  
- The result of the comparison of the FNP fire protection program is documented in the License Amendment Request Attachment A (Table B-1)

# Details on Approval Requests

- Requirements
  - In accordance with 10 CFR 50.48(c)(2)(vii) Performance-based methods, the fire protection program elements and minimum design requirements of Chapter 3 may be subject to the performance-based methods permitted elsewhere in the standard.
  - In accordance with NFPA 805 Section 2.2.8, the performance-based approach to satisfy the nuclear safety, radiation release, life safety, and property damage/business interruption performance criteria requires engineering analyses to evaluate whether the performance criteria are satisfied.
  - FNP is requesting approval of performance based exceptions to requirements in Chapter 3 of NFPA for five sections.

# Approval Request 1

## Section 3.3.5.1 - Wiring Above Suspended Ceiling

- NFPA 805 Section 3.3.5.1 states:
  - *“Wiring above suspended ceiling shall be kept to a minimum. Where installed, electrical wiring shall be listed for plenum use, routed in armored cable, routed in metallic conduit, or routed in cable trays with solid metal top and bottom covers.”*
- FNP has identified wiring above suspended ceilings that may not comply with the requirements of this code section. This wiring may be non-listed video/communication/data cables.
- FNP reviewed the plant for areas of suspended ceilings and identified two locations:
  - Auxiliary Building corridors and office areas
  - Control Room/associated offices and the Technical Support Center
  - Computer Room, Unit 1 and 2



## Approval Request 1 (cont.)

- Nearly all other utilities who have submitted an NFPA 805 LAR have included a similar Approval Request.
- Generic RAI XX is related to this Approval Request with respect to the association of plenum rated cable to NFPA 262 and NFPA 262 equivalent to IEEE-383. Similar questions posed to the industry indicate that this logic is not correct as NFPA 262 and IEEE-383 are equivalent for flame spread, IEEE-383 does not take into account smoke generation as a criteria for NFPA 262.
- The Approval Request will be modified to remove the discussion of fire tests as FNP submits there is sufficient basis for approval without this correlation.

# Approval Request 2

## Section 3.3.5.2 - Use of Plastic Conduit

- NFPA 805 Section 3.3.5.2 states:
  - *“Only metal tray and metal conduits shall be used for electrical raceways. Thin wall metallic tubing shall not be used for power, instrumentation, or control cables. Flexible metallic conduits shall only be used in short lengths to connect components.”*
- Plastic conduits are permitted when embedded installations.
- The plastic conduit is embedded within a non-combustible enclosure which provides protection from mechanical damage and from damage resulting from either an exposure fire or from a fire within the conduit impacting other targets.

# Approval Request 3

## Section 3.3.12(1) - Oil Misting from RCP's

- NFPA 805 Section 3.3.12(1) states:
  - *“The oil collection system for each reactor coolant pump shall be capable of collecting lubricating oil from all potential pressurized and nonpressurized leakage sites in each reactor coolant pump oil system.”*
- Multiple other utilities have submitted a similar Approval Request.
- The FNP oil collection system is designed and was reviewed in accordance with 10 CFR 50 Appendix R, Section III.O to collect leakage from credible pressurized and nonpressurized leakage sites in the reactor coolant pump oil system. This may not include collection of oil mist as the result of pump/motor operation. Oil misting is not leakage due to equipment failure, but inherent in the operation of large open motors.

# Approval Request 4

## Section 3.5.15 – Spacing of Fire Hydrants

- NFPA 805 Section 3.5.15 states:
  - *“Hydrants shall be installed approximately every 250 ft (76 m) apart on the yard main system. A hose house equipped with hose and combination nozzle and other auxiliary equipment specified in NFPA 24, Standard for the Installation of Private Fire Service Mains and Their Appurtenances shall be provided at intervals of not more than 1000 ft (305 m) along the yard main system.*
  - Exception: Mobile means of providing hose and associated equipment, such as hose carts or trucks, shall be permitted in lieu of hose houses. Where provided, such mobile equipment shall be equivalent to the equipment supplied by three hose houses.”*
- Yard hydrants at FNP are installed at intervals of approximately 250 to 300 ft as noted on the design output drawings governing the installations.

## Approval Request 4 (cont.)

- The physical locations of fire hydrants are near each major plant structure, and are spaced to provide a minimum of two hose streams capable of reaching the power block structures. Fire hoses, nozzles and auxiliary equipment are available in the hydrant houses, where required, or furnished on the mobile fire equipment trailer that may be used at any fire hydrant that is accessible.

# Approval Request 5

## Section 3.5.16 – Use of Fire Water

- NFPA 805 Section 3.5.15 states:
  - *“The fire protection water supply shall be dedicated for fire protection use only.*
  - Exception No. 1: Fire protection water supply systems shall be permitted to be used to provide backup to nuclear safety systems, provided the fire protection water supply systems are designed and maintained to deliver the combined fire and nuclear safety flow demands for the duration specified by the applicable analysis*
  - Exception No. 2: Fire protection water storage can be provided by plant systems serving other functions, provided the storage has a dedicated capacity capable of providing the maximum fire protection demand for the specified duration as determined in this section.”*
- Farley Nuclear Plant’s fire protection system is dedicated for fire protection use only with two exceptions.

# Approval Request 5 (cont.)

- First, the fire protection water supply and distribution system is identified in the Loss of Component Cooling Water (CCW) Abnormal Operating Procedure as an alternate cooling water source if there is no other available cooling source for the charging pumps.
- This use of the fire protection system would only be required in an emergency situation involving the loss of CCW and is procedurally controlled and implemented by the Shift Manager.
- Second, the fire protection water supply system is frequently used for manual wash down of the Circulating Water Pump Intake Screens.
- Control Room personnel have the ability to secure this non-fire protection water demand should a fire occur.
- In addition, design margin exists between the fire protection water supply and the most hydraulically challenging fire scenario.