L-2018-075
10 CFR 50.90
March 27, 2018

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

RE: Turkey Point Nuclear Plant, Units 3 and 4
Docket Nos. 50-250 and 50-251
Renewed Facility Operating Licenses DPR-31 and DPR-41

Response to Request for Additional Information Regarding License Amendment Request 255, Relocate the Explosive Gas Monitoring, Gas Decay Tanks and Standby Feedwater System Technical Specifications to Licensee Controlled Documents

References:

1. Florida Power & Light Company letter L-2017-110, License Amendment Request 255, Relocate the Explosive Gas Monitoring, Gas Decay Tanks and Standby Feedwater System Technical Specifications to Licensee Controlled Documents, August 23, 2017 ((ADAMS Accession No. ML17353A492))

2. Florida Power & Light Company letter L-2017-88, Supplemental Information for License Amendment Request 255, Relocate the Explosive Gas Monitoring, Gas Decay Tanks and Standby Feedwater System Technical Specifications to Licensee Controlled Documents, October 19, 2017 (ADAMS Accession No. ML17292A789)

3. NRR E-Mail Capture, Request for Additional Information - Turkey Point 3 and 4 LAR 255 (CAC Nos MG0143 and MG0144; EPID L-2017-LLA-0272), February 15, 2018 (ADAMS Accession No. ML18047A035)

In Reference 1, as supplemented by Reference 2, Florida Power & Light Company (FPL) submitted license amendment request (LAR) 255 for Turkey Point Nuclear Plant Units 3 and 4 (Turkey Point). The proposed license amendments modify the Turkey Point Technical Specifications by relocating the Explosive Gas Monitoring Instrumentation, Explosive Gas Mixture and Gas Decay Tanks System requirements to licensee controlled documents and establishing a Gas Decay Tank Explosive Gas and Radioactivity Monitoring Program. The LAR additionally seeks to relocate the Standby Feedwater System requirements to licensee controlled documents and modify related Auxiliary Feedwater System requirements.

In Reference 3, the NRC requested additional information necessary to complete its review.

The enclosure to this letter provides the FPL response to the request for additional information. This response provides additional information that clarifies the application, does not expand the scope of the application as originally noticed, and should not change the NRC staff's original proposed no significant hazards consideration determination as published in the *Federal Register*.

This letter contains no new or revised regulatory commitments.

Should you have any questions regarding this submission, please contact Mr. Robert Hess, Turkey Point Licensing Manager, at 305-246-4112.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on March 27 ,2018.

Sincerely,

Robert Coffey
Regional Vice President - Southern Region
Florida Power & Light Company

Enclosure: Response to Request for Additional Information

cc: USNRC Regional Administrator, Region II
USNRC Project Manager, Turkey Point Nuclear Plant
USNRC Senior Resident Inspector, Turkey Point Nuclear Plant
Ms. Cindy Becker, Florida Department of Health

Enclosure

Florida Power & Light Company Response to NRC Request for Additional Information Regarding Licence Amendment Request 255
Relocate the Explosive Gas Monitoring, Gas Decay Tanks and Standby Feedwater System Technical Specifications to Licensee Controlled Documents

In an e-mail memorandum dated February 20, 2018, the Containment and Plant Systems Branch (SCPB) of the NRC Office of Nuclear Reactor Regulation requested the additional information identified below regarding License Amendment Request (LAR) 255, Relocate the Explosive Gas Monitoring, Gas Decay Tanks and Standby Feedwater System Technical Specifications to Licensee Controlled Documents. The Florida Power & Light Company (FPL) response follows:

Background

The requirements of Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.36, "Technical Specifications," specify that each Operating License issued by the Commission contain TSs that include limiting conditions for operation (LCOs), which are the lowest functional capability or performance levels of equipment required for safe operation of the facility. Section 50.36(c)(2)(ii) of 10 CFR provides the four criteria to define the scope of equipment and parameters to be included in the TS LCOs. Criterion 4 states, "A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety."

NUREG-1431, Volume 2, "Standard Technical Specifications - Westinghouse Plants" identifies LCOs for the following systems as meeting Criterion 4:

- the remote shutdown systems for control room evacuation
- the reactor coolant system loops in Modes 4 and 5 for decay heat removal and boron mixing
- the residual heat removal system for coolant circulation in Mode 6

These systems support essential safety functions such as decay heat removal and reactivity management.

The Turkey Point TSs contain similar requirements for the reactor coolant system loops and the residual heat removal (RHR) system. For example, Turkey Point TS LCO 3.4.1.3, "Reactor Coolant System - Hot Shutdown," identifies five decay heat removal paths consisting of the three reactor coolant loops (i.e., the loop piping and the associated steam generator and reactor coolant pump) and the two RHR loops. The LCO specifies that at least two of these decay heat removal paths be operable and one be in operation.

The AFW system at Turkey Point consists of three turbine-driven pumps operated in two trains that are shared between the two units. Since the AFW pumps are all steam-driven and located in a single fire area, they could be susceptible to failure from a single cause.

As described in Section 9.11.2, "Auxiliary Feedwater Pumps," of the Turkey Point Updated Final Safety Analysis Report (UFSAR), the standby steam generator feedwater pumps (SSGFPs) consist of one motor-driven pump and one diesel-engine-driven pump with an integral fuel tank and electric starting system. The SSGFPs are used to supply feedwater to the steam generators during normal start-up, shutdown, and hot standby conditions. In case of loss of offsite power, the normal safety supply of feedwater to the steam generators is provided by the steam turbine-driven AFW pumps. However, feedwater can also be supplied by the diesel engine-driven SSGFP. In addition, the current standby feedwater system TS bases state the following, in part: "The function of the Standby Feedwater System for OPERABILITY determinations is that it can be used as a backup to the Auxiliary Feedwater (AFW) System in the event the AFW System does NOT function properly."

Section 9.3 of the Turkey Point UFSAR describes that the RHR system inlet from the reactor coolant system consists of a single line with two normally closed isolation valves in series. Therefore, a failure of one of the two isolation valves to open would prevent use of either RHR loop as a decay heat removal path.

SCPB RAI 1

As noted in LAR, the standby feedwater system is specifically credited for the AFW decay heat removal function for a fire in the AFW pump area. The system also could support the decay heat removal function above RHR entry conditions and below the reactor coolant system temperature necessary for adequate steam pressure to operate the turbine-driven AFW pumps. Neither the LAR, nor the supplement, provides a discussion of the safety-significance of these particular functions for the Turkey Point. This information is necessary for the staff to evaluate whether this item satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

The standby feedwater system pumps could be necessary to support decay heat removal and coolant circulation when the reactor is in Mode 4, relying on the steam generators for decay heat removal, and the steam pressure is insufficient for the turbine-driven AFW pumps. Identify periods, as prescribed by procedures, during normal plant operations (i.e., heatup, startup, shutdown, and cooldown), abnormal operating conditions (e.g., valve failure to operate), and emergency operations where the standby feedwater system pumps would be part of the primary means of adding water to the steam generators for decay heat removal in Mode 4. Describe any Turkey Point-specific operating experience where the standby feedwater pumps were used for decay heat removal when the AFW pumps were not available and/or RHR entry conditions were not satisfied.

FPL Response to SCPB RAI 1

As previously discussed in Reference 2, the Fire PRA for Turkey Point indicates elevated risk for the standby steam generator feedwater pumps (SSGFPs), however, fire scenarios and protective features are more appropriately governed by the Fire Protection Program, subject to a separate license condition regarding NFPA-805. Consequently, the risk associated with the SSGFPs should not be used as a deciding factor in determining whether the system meets the 10 CFR 50.36(c)(2)(ii) criteria for TS inclusion as a LCO.

Regarding the systems cited in the RAI as examples which satisfy Criterion 4, a review of NUREG-1431, Volume 2, Bases (Reference 3) reveals that each of the systems are credited as either the primary or backup means of performing a function. In contrast, the Standby Feedwater System is neither relied upon as the primary nor backup means of performing the function of decay heat removal, and so is not similar to the Criterion 4 examples cited in the RAI. The Standby Feedwater System is not credited for performing any safety function in any plant MODE or configuration, but may be utilized in the event all three AFW pumps are disabled, as discussed in certain fire scenarios. As stated above, fire scenarios and protective features are subject to a separate license condition and do not meet the 10 CFR 50.36(c)(2)(ii) criteria for inclusion as a LCO.

The RAI requests information regarding Standby Feedwater System use during normal, abnormal and emergency conditions.

- During MODES 1, 2 and 3, the AFW system serves as the primary means of decay heat removal should power be lost to the motor-driven Main Feedwater (MFW) pumps. In the event an AFW train is unavailable, the redundant AFW train is available to perform the decay heat removal function.

- During MODES 4, 5 and 6, the Reactor Coolant System loops and the RHR system provide decay heat removal. Compliance with LCO 3.4.1.3 assures functional redundancy without reliance on the Standby Feedwater System. The Standby Feedwater System has no TS applicability in MODE 4, 5 or 6.

- During Unit cooldown, either the motor-driven MFW pumps or the motor-driven Condensate pumps provide the requisite flow to the steam generators for decay heat removal until the

shutdown cooling loops can be established by means of the RHR pumps. Compliance with the MODE 4 requirements of LCO 3.4.1.3 is maintained in this way.

- During Unit heatup, the Standby Feedwater System is typically placed in service once shutdown cooling has been secured, but only as a matter of operational expedience. Use of the Standby Feedwater System allows heatup to continue in parallel rather than sequential to preparations for placing the MFW system in service. Alternative means of feedwater flow during this evolution include the AFW and Condensate systems, or otherwise restoring shutdown cooling via RHR.

- During an abnormal operating condition, the Standby Feedwater System is placed in service only following unsuccessful attempts to establish AFW flow or otherwise as a precursor to shutting down AFW. Unsuccessful attempts to establish AFW flow to the steam generators prompts entry into off-normal operating procedure 3/4*-ONOP-075, Auxiliary Feedwater System Malfunction, which directs establishing SSGFP flow within 20 minutes. If SSGFP flow cannot be established, the procedure calls for establishing feedwater flow from the Condensate system.
  * [3/4 denotes Unit 3 or Unit 4]

- During an emergency operating condition, a SSGFP (or MFW pump) is placed in service only as a precursor to shutting down AFW. One exception is loss of all AC power whereby the emergency procedure directs entry into 3/4-ONOP-075 if sufficient AFW flow cannot be established. The other exception is loss of a secondary heat sink, in which case the emergency procedure employs any of several feedwater sources in the effort to maintain steam generator levels.

- Should either of the RHR suction loop series isolation valves fail while the shutdown cooling loops are in operation, the steam generators are not available for use as a heat sink unless in MODE 4. In MODE 4, both the Condensate and the Standby Feedwater System are available to provide the requisite steam generator flow until such time that sufficient steam is available to operate an AFW pump or otherwise until a MFW pump can be placed in service.

The RAI requests a description of Turkey Point operating experience where the SSGFPs were used for decay heat removal when the AFW pumps were not available and/or RHR entry conditions were not satisfied. FPL is unfamiliar with Turkey Point operational experience involving loss of all three AFW pumps or reliance on the SSGFPs out of necessity. Moreover, on the rare occasion that decay heat removal capability has been lost, the duration was momentary and the steam generators were not available for use as a heat sink. As stated earlier, the Standby Feedwater System is most likely to be employed during heatup once shutdown cooling has been secured, and only as a matter of operational expedience. However, FPL does not recall Turkey Point operating experience in which the Standby Feedwater System was relied upon as the sole means of decay heat removal.

SCPB RAI 2

In the LAR supplement dated October 19, 2017, the licensee indicates for internal events and flooding events, a sensitivity analysis was done by increasing the failure probability of the SSGFPs by two orders of magnitude. The licensee further states that this results in the system's contribution to Turkey Point's core damage frequency (CDF) remaining below 1E-6 per year. Clarify whether the safety analysis includes any shutdown modes. Provide a comparison between the standby feedwater system pumps and other safety-related components that support similar decay heat removal functions using standard measures of safety significance.

FPL Response to SCPB RAI 2

The Turkey Point PRA does not extend to any shutdown conditions, so the only values available are for operating conditions. A recent update to the Turkey Point PRA has resulted in substantial changes in the risk profile and, therefore, system and component importances. These improvements included a Human Reliability Analysis update, Common Cause Failure Analysis update, recovery of offsite power credit update, initiating event frequency update, and modeling of the new Flowserve RCP seals. This model update resulted in the lowering of the importances of systems performing decay heat removal functions similar to that of SSGFW. The result is that the risk importance measures for internal events for the SSGFPs are now close to those of pumps in the other systems that perform decay heat removal functions.

References

1. Florida Power & Light Company letter L-2017-110, License Amendment Request 255, Relocate the Explosive Gas Monitoring, Gas Decay Tanks and Standby Feedwater System Technical Specifications to Licensee Controlled Documents, August 23, 2017 (ADAMS Accession No. ML17353A492)

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3. NUREG-1431, Standard Technical Specifications - Westinghouse Plants, Revision 4.0, Volume 2, Bases (ADAMS Accession No. ML 12100A228)