

## **NRR-DMPSPEm Resource**

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**From:** Wentzel, Michael  
**Sent:** Wednesday, February 14, 2018 12:16 PM  
**To:** Catron, Steve; Mack, Jarrett  
**Cc:** Czaya, Paul  
**Subject:** Revision to Turkey Point LAR 255 RAIs  
**Attachments:** Revised LAR 255 RAIs.docx

Steve and Jarrett,

Based on our phone call yesterday, the NRC staff revised the first RAI to remove the inaccurate reference to Mode 4 and to try to clarify our request. Once you have had a chance to review, please let me know if you feel additional clarification is necessary.

Thanks,  
Mike

Michael Wentzel  
Project Manager  
NRR/DORL/LPLII-2  
(301) 415-6459  
[michael.wentzel@nrc.gov](mailto:michael.wentzel@nrc.gov)

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**Recipients:**

"Czaya, Paul" <Paul.Czaya@fpl.com>  
Tracking Status: None  
"Catron, Steve" <Steve.Catron@fpl.com>  
Tracking Status: None  
"Mack, Jarrett" <Jarrett.Mack@fpl.com>  
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## 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.~~

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As noted in LAR, the ~~standby feedwater system is~~SSGFPs are 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.~~The UFSAR states that the SSGFPs are used during normal start-up, shutdown, and hot standby to supply water to the steam generators, which supports the residual heat removal function. 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 are not functioning properly or unavailable. 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~~SSGFPs would be part of are identified as 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~~.