

## Palisades Nuclear Plant

# Pre-Submittal Call for License Amendment Request to Add Surveillance Requirement to Tech Spec 3.3.5.2a

April 10, 2018

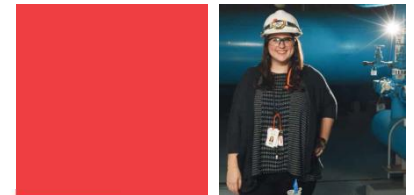


# Introductions and Meeting Purpose

## Introductions

### Meeting purpose:

- To introduce Entergy's plans to submit a license amendment request (LAR) to add a setpoint verification requirement to Technical Specification (TS) Surveillance Requirement (SR) 3.3.5.2a.
- The new TS SR would add to the degraded voltage channel calibration an additional setpoint verification requirement that combines the delay time for a second level undervoltage relay (SLUR) with the delay time for an undervoltage time delay relay (TDR).
- The LAR would resolve a non-conservative TS.



# Current TS SR

## 3.3.5 Diesel Generator (DG) – Undervoltage Start (UV Start)

SR 3.3.5.2 Perform CHANNEL CALIBRATION on each Loss of Voltage and Degraded Voltage channel with setpoints as follows:

a. Degraded Voltage Function  $\geq 2187$  V and  $\leq 2264$  V

Time delay:  $\geq 0.5$  seconds and  $\leq 0.8$  seconds; and

# Background

The current TS SR includes verification of the degraded voltage sensing, SLUR that starts its associated emergency diesel generator (EDG) but does not include verification of the setpoint for the TDR that prevents inadvertent shedding of bus loads.

This condition was identified as a non-conservative TS during an NRC inspection, and was dispositioned in accordance with NRC Administrative Letter (AL) 98-10, *Dispositioning of Technical Specifications that are Insufficient to Assure Plant Safety*

# Background

As an immediate action to address the non-conservative TS, Entergy revised TS surveillance procedures to verify the time delay relay setpoint.

# Time Delay Discussion

Upon a degraded voltage condition, the SLURs will start the EDGs after a nominal 0.65-second delay.

If the undervoltage condition continues to exist on the buses after an additional nominal six seconds, the TDR will open the respective bus supply and load breakers. The safety-related buses will then be repowered from their respective EDGs and the required load breakers will be closed onto the buses in a sequential manner.

# Proposed TS SR 3.3.5.2a

*Perform CHANNEL CALIBRATION on each Loss of Voltage and Degraded Voltage channel with setpoints as follows:*

*a. Degraded Voltage Function  $\geq 2187$  V and  $\leq 2264$  V.*

- 1. Time delay (*degraded voltage sensing relay*):  
 $\geq 0.5$  seconds and  $\leq 0.8$  seconds, and**
- 2. Time delay (*degraded voltage sensing relay plus time delay relay*):  $\geq 6.2$  seconds and  $\leq 7.1$  seconds; and**

(Changes shown in bolded red.)

# Calculation of New TS SR Setpoints

The new setpoints,  $\geq 6.2$  seconds and  $\leq 7.1$  seconds, are summations of the time delays for the SLUR and the TDR, including uncertainties.

Nominal SLUR time delay = 0.65 sec

SLUR setpoint uncertainty = +/- 0.0809 sec

Nominal TDR time delay = 6 sec

TDR setpoint uncertainty = -0.216 sec / +0.258 sec

The calculations that determined the uncertainties for the SLURs and TDRs will be provided in the LAR submittal.



# Calculation of New TS SR Setpoints

Adding together the nominal time delays for the SLUR and the TDR and their uncertainties:

$$\begin{aligned} \text{Minimum setpoint: } & (0.65 \text{ sec} - 0.0809 \text{ sec}) + (6 \text{ sec} - 0.216 \text{ sec}) \\ & = 6.3531 \text{ sec} \end{aligned}$$

$$\begin{aligned} \text{Maximum setpoint: } & (0.65 \text{ sec} + 0.0809 \text{ sec}) + (6 \text{ sec} + 0.258 \text{ sec}) \\ & = 6.9889 \text{ sec} \end{aligned}$$

In order to bound these calculated time delay setpoints, the proposed TS time delay setpoints were chosen to be:

$$\geq 6.2 \text{ sec and } \leq 7.1 \text{ sec.}$$

# Calculation of New TS SR Setpoints

The proposed combined minimum time delay of 6.2 seconds is long enough to override any short term disturbances that would cause voltage drops, such as by the start of motors.

- Evaluation of the motor flow loads and motor starting loads during an accident with offsite power available indicates that voltages on the safety related 2400 V buses will recover from momentary voltage drops to a value above the minimum voltage setpoint within 6.2 seconds.

The LAR submittal will include a calculation that supports this minimum time delay.

# Calculation of New TS SR Setpoints

The proposed maximum time delay setpoint of 7.1 seconds does not exceed the maximum time delay assumed in the Palisades Final Safety Analysis Report accident analyses.

- Upon a loss of offsite power, the accident analyses assume that an EDG starts and connects to its bus in 10 seconds. The time delay maximum setpoint of 7.1 seconds occurs in parallel with, and is less than, the EDG starting and connection time of 10 seconds.

# Calculation of New TS SR Setpoints

The 7.1-second setpoint prevents motor damage and ensures required accident mitigating loads are available to re-sequence onto the safety buses.

The LAR submittal will include a calculation that supports the 7.1-second setpoint with respect to impacts on required accident loads.

# TS Bases

The LAR submittal will include a markup of the TS Bases for TS 3.3.5 to reflect the proposed changes to TS SR 3.3.5.2a, for information.

# LAR Submittal Package

The LAR submittal package will include the following:

- A description and evaluation of the proposed change, including a description of applicable regulatory requirements and a no significant hazards consideration determination.
- Clean and marked up copies of the proposed TS change.
- Uncertainty analyses for the time delays for the SLURs and the TDRs.
- Calculations that provide justification for the minimum and maximum setpoints.
- A marked up copy of the Bases for TS 3.3.5, for information.

# Submittal Schedule

Entergy plans to submit the LAR in the next two weeks.

Normal review time (one year) will be requested.

Implementation of approved LAR will be within 60 days.





**QUESTIONS?**

— WE POWER LIFE<sup>SM</sup> —