

# GROUND GRID REMEDIATION/UPGRADE FOR TURKEY POINT NUCLEAR PLANT

## CLIENT

**NextEra Energy**

Turkey Point Nuclear Plant

## CONTRIBUTORS

Structural Integrity Associates, Inc. (SIA) - Nuclear  
C2C Technical Services (C2C) - Process Industries I & E

## BACKGROUND

SIA was presented with an opportunity to assist NextEra Energy (NEE) with an electrical issue at the Turkey Point Nuclear Plant (PTN). The client reached out to SIA based on a strong existing relationship and mutual trust built from previous projects. The request started as an engineering-only proposal but subsequently escalated to include construction and the potential for follow-on mitigation design and analysis.

On September 22, 2023, lightning struck the substation tower in Bay #10 of NextEra's Turkey Point Nuclear Plant switchyard. Local lightning protection equipment prevented the strike from migrating to high-voltage equipment and dispersed approximately 162 KA of energy into the substation grounding grid. However, a protection relay contact flashed, causing the turbine and the reactor to trip.

To mitigate similar risks, NEE desired to design and install alternate ground grid connections to reduce the resistivity between the station and the switchyard. As this work is electrical in nature, it represented a unique opportunity to engage SIA's sister company, C2C.

## SUMMARY OF SI SUPPORT

Initially, the project was believed to be primarily an engineering design task, with an option for construction. SI engineers reviewed information and test results provided by NEE, and provided feedback on the constructability and presumed effectiveness for several different mitigation options. After several days of discussions, NEE management decreed that implementation work needed to be accelerated. SI mobilized both engineering and electrical personnel to the site and proceeded with field routing and in-situ design activities in parallel. Following contract issuance on Saturday, the SI team was fully deployed to the site on Monday, with all field work completed by Friday morning (4-½ days).



PROJECT EXAMPLE

Key aspects of SI's technical support included:

- Assessment of NextEra test results to determine optimal mitigation strategy.
- Seamless integration of 3rd-party excavation and ground repair vendor.
- Work both inside and outside of the protected area.
- Field routing and support of new grounding cable and conduct.
- Location and connection of cabling at tie-in point on plant side.
- Field engineering and final updates to drawings / work packages.

Upon completion of the work, resistivity between the switchyard and station grounding grid was reduced by a factor of ~2X, significantly increasing the site's ability to withstand future extreme weather events.

## VALUE TO CLIENT

SI provided responsive, expert support to NEE in response to a unique challenge of lightning susceptibility. Skilled personnel from multiple business units worked in tandem to deliver a timely, cost-effective solution.

"The SI team was unbelievable. I personally have not seen a crew so dedicated to performing the work efficiently, professionally, safely, and error-free. The implementation was so well done that people cannot even tell that it is there."

Bill Francis | Director, Site Capital Projects, PTN

