



Duane Arnold Energy Center Loss of Offsite Power Due to Derecho

May 27, 2021

Outline

- **Duane Arnold Overview**
- **Summary of the Event**
- **Insights**

DAEC Overview

- GE BWR/4 – Mark I Containment
- Rated Thermal Power 1,912 MW(t)
- Rated Net Electric Power ~615 MW(e)



Plant status prior to event

- **Plant Status on August 10, 2020**
 - Plant was operating normally
 - Diesel Driven Fire Pump inoperable due to maintenance
 - Dry cask storage campaign under way in the spent fuel pool
- **Weather Forecast for August 10, 2020**
 - National Weather Service Storm Prediction Center issued Moderate Risk Outlook
 - At 11:38 the National Weather Service Issued a Severe Thunderstorm Watch for the DAEC area which was upgraded to a Severe Thunderstorm Warning at 12:02

Detailed Event Summary

- **August 10 – 12:30 to 12:35**
 - High sustained winds cause perturbation in the power lines feeding DAEC
 - At 12:35 voltage drop is significant enough to automatically start the diesel generators, but they did not tie on to their respective buses as offsite power was still available
- **August 10 – 12:49**
 - Sustained high winds damage all power lines leading to the plant causing a loss of offsite power
 - The plant responded as designed
 - The reactor tripped and all control rods fully insert
 - Emergency Diesel Generators (already operating) automatically connect to and power their respective essential buses
 - Operators enter their emergency response procedures
 - Notice of Unusual Event Reported to the NRC

Detailed Event Summary

- **August 10 – 13:00 to 24:00**
 - A plant cooldown to Mode 4 was initiated
 - Emergency Service Water strainer differential pressure alarm in Control Room
 - The “B” ESW strainer was bypassed in accordance with station procedures
 - Both Emergency Service Water systems were stable throughout the event
 - Systems restored to facilitate plant recovery
 - Reactor Water Cleanup
 - Spent Fuel Pool Cooling
 - General Service Water
 - Coordinate with ITC to prepare Switchyard for repairs

Detailed Event Summary

- **August 11 – 02:30**
 - The plant reached Mode 4, Cold Shutdown
- **August 11 – 11:26**
 - 161kV Vinton line is restored to the switchyard restoring off-site power to available status
- **August 11 – 12:15**
 - Startup transformer is reenergized from offsite power
- **August 11 – 13:12 to 13:24**
 - Safety Bus A and B reenergized from offsite power
- **August 11 – 16:00**
 - Notice of Unusual Event Terminated

Insights

- **There was never an impact to public health or safety**
- **The plant operated as designed when offsite power was lost**
 - The loss of the non-safety cooling towers did not impact the ability to safely shut the plant down or remove decay heat.
- **Operators responded in accordance with plant procedures**
- **Plant achieved safe shutdown**
- **Subsequent actions**
 - Assisted SRA and SRI with risk significance
 - Engaged owners group to provide insights for generic impact
 - Provided comments to NRC ASP report