



Memorandum from the Office of the Inspector General

May 15, 2024

Kris G. Edmondson

**FINAL REPORT – EVALUATION 2024-17472 – COMPLIANCE WITH NERC
EMERGENCY PREPAREDNESS AND OPERATIONS RELIABILITY STANDARD –
COAL**

Attached is the subject final report for your review. Your written comments, which addressed your actions taken, have been included in the report. No further action is needed at this time.

If you have any questions, please contact Deana D. Scoggins, Senior Auditor, Evaluations - Operations, at (423) 785-4822 or Lindsay J. Denny, Director, Evaluations - Operations, at (865) 633-7349. We appreciate the courtesy and cooperation received from your staff during the evaluation.

David P. Wheeler
Assistant Inspector General
(Audits and Evaluations)

DDS:FAJ
Attachment

cc (Attachment):

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OIG File No. 2024-17472



Office of the Inspector General

Evaluation Report

To the Vice President, Coal
Operations

COMPLIANCE WITH NERC EMERGENCY PREPAREDNESS AND OPERATIONS RELIABILITY STANDARD - COAL

Evaluation Team
Deana D. Scoggins
Heather M. Cook

Evaluation 2024-17472
May 15, 2024

ABBREVIATIONS

Cumberland	Cumberland Fossil Plant
EOP	Emergency Preparedness and Operations
Gallatin	Gallatin Fossil Plant
NERC	North American Electric Reliability Corporation
PM	Preventive Maintenance
PO	Power Operations
SPP	Standard Programs and Processes
TVA	Tennessee Valley Authority
WO	Work Order

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MEMORANDUM DATED MAY 8, 2024, FROM KRIS G. EDMONDSON
TO DAVID P. WHEELER



Evaluation 2024-17472 – Compliance With NERC Emergency Preparedness and Operations Reliability Standard – Coal

EXECUTIVE SUMMARY

Why the OIG Did This Evaluation

North American Electric Reliability Corporation (NERC) *Emergency Preparedness and Operations* (EOP) standard 011-2, was approved by the Federal Energy Regulatory Commission on August 24, 2021, with an effective date of April 1, 2023. EOP-011-2 includes a requirement to implement and maintain a cold weather preparedness plan for generating units with 7 required elements. EOP-011-2 also includes a requirement for evidence documenting the plan was implemented and maintained as well as evidence that applicable personnel completed training on the cold weather preparedness plan. Power Operations Standard Programs and Processes 10.020, *Seasonal Readiness Preparation at Coal, Gas, and Hydro Sites*, requires:

- Certification that winter seasonal readiness work is complete by November 15.
- Annual completion of a master winterization preventive maintenance (PM) that references all winterization PMs.

Due to the risk of weather-related generation asset outages, we performed an evaluation of the Tennessee Valley Authority's (TVA) winter readiness at coal plants. The objective of our evaluation was to determine if TVA completed cold-weather plans in accordance with NERC reliability standard for *Emergency Preparedness and Operations*.

What the OIG Found

We determined TVA generally completed cold-weather plans in accordance with the NERC reliability standard for EOP-011-2. However, we identified minor discrepancies in (1) one cold-weather plan, (2) certification letters, and (3) training.

What the OIG Recommends

We made five recommendations to the Vice President, Coal Operations, related to taking actions to address the cold-weather plan, certification letters, and training. Our detailed recommendations are listed in the body of this report.



Evaluation 2024-17472 – Compliance With NERC Emergency Preparedness and Operations Reliability Standard – Coal

EXECUTIVE SUMMARY

TVA Management's Comments

In response to our draft report, TVA management agreed with the recommendations and provided actions taken to address the recommendations. See the Appendix for TVA management's complete response.

Auditor's Response

We agree with the actions taken to address the recommendations.

BACKGROUND

North American Electric Reliability Corporation (NERC) *Emergency Preparedness and Operations* (EOP) standard 011-2 was approved by the Federal Energy Regulatory Commission on August 24, 2021, with an effective date of April 1, 2023. EOP-011-2 includes a requirement to implement and maintain a cold weather preparedness plan for generating units with 7 required elements. The requirements include (1) generating units freeze-protection measures, (2) annual inspection and maintenance of the freeze-protection measures (3) capability and availability, (4) fuel-switching capabilities, (5) fuel supply and inventory concerns, (6) environmental constraints, and (7) minimum design temperature or historical operating temperature or current cold-weather performance temperature determined by engineering analysis. EOP-011-2 also includes a requirement for evidence documenting that the plan was implemented and maintained as well as evidence that applicable personnel completed training of the cold weather preparedness plan.

Power Operations (PO) Standard Programs and Processes (SPP) 10.020, *Seasonal Readiness Preparation at Coal, Gas, and Hydro Sites*, requires:

- Certification that winter seasonal readiness work is complete by November 15.
- Annual completion of a master winterization preventive maintenance (PM) that references all winterization PMs.

The certification letter documents seasonal readiness work is complete. Examples of items included in the certification letters were the completion of seasonal readiness PM work orders (WO), construction of temporary enclosures, repair of assessment findings for heat trace¹ and insulation, and information about site procedures. In addition, sites use emergency-response plans for cold weather to “prepare for and respond to operating emergencies contributed to cold[-]weather events and ensure compliance with NERC EOP[-]011-2.” Tennessee Valley Authority (TVA) coal plants implemented their plans between August and October of 2023.

In December 2022, during Winter Storm Elliott, TVA directed local power companies to reduce power consumption by 5 percent and then by 10 percent due to weather-related production losses. According to TVA, as of January 22, 2024, they have invested \$123 million in winter readiness since Winter Storm Elliott. Due to the risk of weather-related generation asset outages, we performed an evaluation of TVA's winter readiness at coal plants.

¹ Heat trace is used to maintain or raise the temperature of pipes and vessels.

OBJECTIVE, SCOPE, AND METHODOLOGY

The objective of our evaluation was to determine if TVA completed cold-weather plans in accordance with the NERC reliability standard for *Emergency Preparedness and Operations*. The scope of our evaluation included cold-weather plans and winter certifications for fiscal year 2024 for Cumberland Fossil Plant (Cumberland), Gallatin Fossil Plant (Gallatin), Kingston Fossil Plant, and Shawnee Fossil Plant. To achieve our objective, we:

- Reviewed site cold-weather plans to determine if required elements were included in compliance with NERC EOP-011-2.
- Verified items from the certification letters were completed.
- Conducted site visits to verify a sample of items identified on certification letters were completed. We randomly selected 4 temporary enclosures and 4 supplemental heat sources² at each site to review. Additionally, we selected 3 cold-weather material and equipment inventory items that were listed in each site's inventory list for verification.
- Reviewed training records for seasonal readiness coordinators at each site to determine if winter-readiness training was conducted in accordance with NERC EOP-011-2 and PO-SPP-10.020.

This evaluation was conducted in accordance with the Council of the Inspectors General on Integrity and Efficiency's *Quality Standards for Inspection and Evaluation*.

FINDINGS

We determined TVA generally completed cold-weather plans in accordance with the NERC reliability standard for EOP-011-2. However, we identified minor discrepancies in (1) one cold-weather plan, (2) certification letters, and (3) training.

ELEMENT MISSING FROM COLD-WEATHER PLAN

EOP-011-2 lists 7 required elements for a cold weather preparedness plan. Three of TVA's four coal site cold-weather plans contained all required elements. One element³ was missing in Gallatin's cold-weather plan. According to the site seasonal readiness coordinator, the plan will be revised to include the information.

² We judgmentally selected one replacement heat source at one site because the randomly selected one had been removed.

³ The missing element was the minimum design temperature or historical operating temperature or current cold weather performance temperature determined by engineering analysis.

ACCURACY OF CERTIFICATION LETTERS

Each site completes a site certification letter that documents seasonal readiness work is complete. Most items⁴ listed on each plant's certification letter were completed prior to the certification letter being signed, with the following exception: At Cumberland, 2 PM WOs were not completed due to a flue gas leak and were not listed as exceptions on the certification letter. Additionally, multiple WOs were not marked as completed prior to the certification letter being signed; however, a site employee stated that the WOs had been completed prior to the certification letter, but were not closed in the system.

As part of our testing to determine if PM WOs were completed prior to the certification letter date, we identified 3 inactive PMs⁵ of 103 PMs listed on the master winterization PMs for all sites that should be removed. Additionally, we identified 7 PMs coded as winterization that should have been included in the master winterization PMs, but were not. If the PM list is not updated and complete, it could increase the risk that all winterization PM WOs are not completed as needed.

TIMELINESS OF TRAINING

EOP-011-2 includes a requirement for evidence that applicable personnel completed training of the cold weather preparedness plan. PO-SPP-10.020 states that annual training must be completed prior to the start of the winter preparation period.⁶ We determined that seasonal readiness coordinators for all four sites received training in March 2023. However, seasonal readiness coordinators at Cumberland and Shawnee Fossil Plant were replaced by three individuals prior to September 14, 2023, but did not receive training until December 2023, which is after the certification letter due date.

RECOMMENDATIONS

We recommend the Vice President, Coal Operations:

- Revise the Gallatin cold-weather plan to include the missing element in compliance with EOP-011-02.

TVA Management's Comments – TVA management agreed with the recommendation and revised the procedure to include the missing element. See the Appendix for TVA management's complete response.

Auditor's Response – We agree with TVA management's action taken.

⁴ Not all items could be verified as completed because some items did not have documentation as support or could not be physically verified. One item was a meeting and the other was a comparison.

⁵ Inactive PMs no longer need to be completed. Examples of PMs that were inactive included a PM for a decommissioned building and a PM where the work was now covered by a different group.

⁶ The SPP does not state the date the winter preparation period starts.

- Reinforce the expectation that certification letters include all exceptions.
TVA Management's Comments – TVA management agreed with the recommendation and have implemented work controls to perform an annual review of WO status to ensure exceptions are listed on the certification letter. See the Appendix for TVA management's complete response.
Auditor's Response – We agree with TVA management's action taken.
- Reinforce the expectations to mark WOs as completed in a timely manner.
TVA Management's Comments – TVA management agreed with the recommendation and have implemented work controls to perform an annual review of WO status to ensure WOs are completed and closed prior to certification. See the Appendix for TVA management's complete response.
Auditor's Response – We agree with TVA management's action taken.
- Update the master winterization PM and implement a periodic review for accuracy.
TVA Management's Comments – TVA management agreed with the recommendation and have implemented work controls to perform an annual review of the master winterization PM prior to WO generation. See the Appendix for TVA management's complete response.
Auditor's Response – We agree with TVA management's action taken.
- Take steps to ensure all seasonal readiness coordinators receive training in a timely manner.
TVA Management's Comments – TVA management agreed with the recommendation and have implemented work controls to ensure accurate designations of seasonal readiness coordinators prior to the seasonal readiness preparation period and utilize the learning management system to ensure training is complete. See the Appendix for TVA management's complete response.
Auditor's Response – We agree with TVA management's action taken.

May 8, 2024

David P. Wheeler, WT 2C-K

REQUEST FOR COMMENTS – DRAFT AUDIT 2024-17472 – COMPLIANCE WITH NERC
EMERGENCY PREPAREDNESS AND OPERATIONS RELIABILITY STANDARD - COAL

Coal Operations would like to thank Deana Scoggins for her diligence, support, and recommendations for improvement as we are continuously improving our performance in relation to compliance with NERC emergency preparedness and operations reliability standard.

In response to the recommendations provided in your draft report dated April 11, 2024, we provide the following comments and responses.

Recommendations:

1. Revise the Gallatin cold-weather plan to include the missing element in compliance with EOP-011-02.

Response

Power Operations agrees with this recommendation. To address this recommendation, Power Operations has revised the procedure to include the missing elements and the procedure is available within Enterprise Content Management (ECM).

2. Reinforce the expectation that certification letters include all exceptions.

Response

Power Operations agrees with this recommendation. To address this recommendation, Power Operations has implemented work controls utilizing Maximo to perform an annual review of all work order status prior to certification to ensure all exceptions are listed on the certification letter.

3. Reinforce the expectations to mark Work Orders (WO) as completed in a timely manner.

Response

Power Operations agrees with this recommendation. To address this recommendation, Power Operations has implemented work controls utilizing Maximo to perform an annual review of all WO status prior to certification to ensure all WOs are complete and closed prior to certification.

4. Update the master winterization Preventative Maintenance (PM) and implement a periodic review for accuracy.

Response

Power Operations agrees with this recommendation. To address this recommendation, Power Operations has implemented work controls utilizing Maximo to perform an annual review of master winterization PM prior to work order generation.

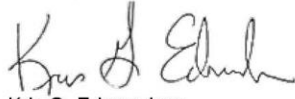
David P. Wheeler, WT 2C-K
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5. Take steps to ensure all seasonal readiness coordinators receive training in a timely manner.

Response

Power Operations agrees with this recommendation. To address this recommendation, Power Operations has implemented work controls utilizing Maximo to ensure accurate designations of seasonal readiness coordinators prior to seasonal readiness preparation period and utilize the learning management system to ensure required training is complete.

Thank you for the time to allow us to review and provide feedback on the draft audit.



Kris G. Edmondson
Vice President
Coal Operations

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OIG File No. 2024-17472