



Memorandum from the Office of the Inspector General

October 26, 2022

Anthony S. Mitchell

**REQUEST FOR MANAGEMENT DECISION – EVALUATION 2022-17336 –
ORGANIZATIONAL EFFECTIVENESS – ACKERMAN COMBINED CYCLE PLANT**

Attached is the subject final report for your review and management decision. You are responsible for determining the necessary actions to take in response to our findings. Please advise us of your management decision within 60 days from the date of this report. In accordance with the Inspector General Act of 1978, as amended, the Office of the Inspector General is required to report to Congress semiannually regarding evaluations that remain unresolved after 6 months from the date of report issuance.

If you have any questions or wish to discuss our findings, please contact Andi R. McCarter, Senior Auditor, at (423) 785-4831 or Lisa H. Hammer, Director, Evaluations – Organizational Effectiveness, at (865) 633-7342. We appreciate the courtesy and cooperation received from your staff during the evaluation.

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

ARM:KDS

Attachment

cc (Attachment):

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OIG File No. 2022-17336



Office of the Inspector General

Evaluation Report

To the Manager,
Ackerman Combined
Cycle Plant

ORGANIZATIONAL EFFECTIVENESS – ACKERMAN COMBINED CYCLE PLANT

Evaluation Team
Andi R. McCarter

Evaluation 2022-17336
October 26, 2022

ABBREVIATIONS

AKC	Ackerman Combined Cycle Plant
CC	Combined Cycle
CR	Condition Report
FY	Fiscal Year
PO	Power Operations
SHRM	Society for Human Resource Management
TSP	Technical Safety Procedure
TVA	Tennessee Valley Authority

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Evaluation 2022-17336 – Organizational Effectiveness – Ackerman Combined Cycle Plant

EXECUTIVE SUMMARY

Why the OIG Did This Evaluation

Organizational effectiveness, as defined in this evaluation, is the ability of an organization to meet its mission and goals. Due to the importance of alignment between strategy, team engagement, and operational performance, the Office of the Inspector General is conducting organizational effectiveness evaluations of business units across the Tennessee Valley Authority (TVA). This evaluation focuses on Ackerman Combined Cycle Plant (AKC), which is an organization in TVA's southern region under the Gas Operations business unit within TVA's Power Operations organization.

AKC, located in Ackerman, Mississippi, was built in 2007 and acquired by TVA on April 14, 2015. AKC is an intermediate generation asset (between base load and peak load assets)ⁱ and is capable of producing 705 megawatts of electricity, enough to power more than 400,000 homes. The objective of this evaluation was to identify factors that could impact AKC's organizational effectiveness.

What the OIG Found

During our evaluation, plant personnel informed us the culture at the plant was generally positive due to strong engagement between team members and with plant management. However, plant personnel informed us of operational concerns regarding (1) the plants groundingⁱⁱ process, (2) work management, and (3) a valve that was not operating properly. Management subsequently addressed the valve concern and is in the process of addressing the concerns related to the grounding process. Based on our observations, we assessed AKC's level of risk related to team engagement and operations as low.

What the OIG Recommends

We recommend the Manager, AKC, (1) complete plans related to AKC's grounding process and (2) address concerns related to work management.

TVA Management's Comments

Gas Operations' management agreed with the recommendations. See Appendix B for TVA management's complete response.

ⁱ Base load is the minimum amount of electric power delivered or required over a given period of time at a steady rate. Peak load is the maximum load during a specified period of time.

ⁱⁱ Grounding is the process of removing excess charge on an object.

BACKGROUND

Organizational effectiveness, as defined in this evaluation, is the ability of an organization to meet its mission and goals. Due to the importance of alignment between strategy, team engagement, and operational performance, the Office of the Inspector General is conducting organizational effectiveness evaluations of business units across the Tennessee Valley Authority (TVA). This evaluation focuses on Ackerman Combined Cycle Plant (AKC), which is an organization in TVA's southern region under the Gas Operations business unit within TVA's Power Operations (PO) organization.

Natural gas generation has taken on a larger role in the TVA generation mix in an effort to move TVA towards a more diverse and adaptable generation portfolio. According to TVA's 2021 annual report, TVA announced its aspirational goal of achieving net-zero carbon emissions by 2050. This includes continued evaluations to retire existing coal units and incorporating new flexible, efficient gas units, which will also enable TVA to expand renewable energy sources in the coming decades while keeping the energy supply reliable.

AKC, located in Ackerman, Mississippi, was built in 2007 and acquired by TVA on April 14, 2015. The plant has two gas turbines to one steam turbine, which allows for greater transmission flexibility and improved reliability for the region. It is capable of producing 705 megawatts of electricity, enough to power more than 400,000 homes. AKC is an intermediate generation asset (between base load and peak load assets,¹ making it beneficial for operating in environments with increased renewable resources, energy efficiency, and changing customer energy demand.

According to AKC's business support representative, fiscal year (FY) 2020 through FY 2022 site improvement initiatives were related to (1) site inventory, (2) preventive maintenance, (3) outage planning, (4) work week process, (5) critical instrumentation, (6) water treatment improvements, and (7) valve maintenance strategy. Metrics for FY 2022 included, but were not limited to, total spend, recordable injuries, trip events, combined cycle (CC) equivalent availability factor,² and environmental noncompliance.

Staffing at AKC has experienced minor changes from FY 2020 to April 2022. As of April 26, 2022, staffing was at 27, including the plant manager, operations manager, maintenance manager, 4 CC lead operations technicians, 4 CC operations technicians, 10 CC operations technician trainees, 2 maintenance mechanics/machinists, 2 CC maintenance coordinators, 1 controls gas specialist, and 1 business support representative.

¹ Base load is the minimum amount of electric power delivered or required over a given period of time at a steady rate. Peak load is the maximum load during a specified period of time.

² The CC equivalent availability factor reflects the percentage of time over a given period that a generating unit was available to generate power for TVA.

OBJECTIVE, SCOPE, AND METHODOLOGY

The objective of this evaluation was to identify factors that could impact AKC's organizational effectiveness. We assessed operations as of May 2022 and culture at the time of our interviews, which also occurred during May 2022. To complete the evaluation, we:

- Reviewed (1) TVA's FY 2022 through FY 2026 business plan, (2) PO's FY 2021 through FY 2023 business plan, (3) Gas Operations' FY 2021 through FY 2023 business plan, (4) TVA's FY 2022 Enterprise Risk documentation, and (5) documentation provided by the AKC business support representative to gain an understanding of initiatives and/or risks within AKC.
- Reviewed plant scorecards for FY 2020 through FY 2022 (through April) to gain an understanding of AKC metrics.
- Reviewed TVA values and competencies (see Appendix A) for an understanding of cultural factors deemed important to TVA.
- Reviewed select TVA and PO Standard Programs and Processes and a technical safety procedure (TSP) to gain an understanding of processes.
- Obtained select condition reports (CR) related to the grounding³ process and a work order and CR related to a valve to support safety concerns expressed during interviews.
- Examined FY 2019 through FY 2022 (as of April) (1) financial information to gain an understanding of expenditures used in plant operations and (2) staffing data to gain an understanding of headcount changes.
- Conducted individual interviews with 28⁴ employees, including management and contractors, and analyzed the results to identify themes that could affect organizational effectiveness.

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

³ Grounding is the process of removing excess charge on an object.

⁴ This includes three contractors interviewed at the request of plant management. Two employees were not interviewed due to (1) extended leave and (2) termination prior to our interviews.

OBSERVATIONS

During our evaluation, plant personnel informed us the culture at the plant was generally positive due to strong engagement between team members and with plant management. However, plant personnel informed us of operational concerns regarding (1) the plants grounding process, (2) work management, and (3) a valve that was not operating properly. Management subsequently addressed the valve concern and is also in the process of addressing the concerns related to the grounding process.

EMPLOYEE ENGAGEMENT

According to the Society for Human Resource Management (SHRM),⁵ employee engagement relates to the level of an employee's connection and commitment to the organization. SHRM also specifies drivers of employee engagement, including commitment of leaders, trust in leadership, and positive relationships with supervisors. TVA has developed competencies intended to define common characteristics that set the tone for how work is to be performed in the organization. Defined behaviors are associated with the competencies to provide guidance as to how employees can demonstrate their commitment to TVA values. Plant personnel informed us that interactions between coworkers and with management were generally positive.

Positive Relationships Between Team Members

TVA expects employees to earn the trust of others through open, honest, and respectful words and actions. Ninety-two percent of employees and contractors commented positively on interactions with others in their group, and all indicated they trusted their coworkers to perform their jobs well. Examples of positive interactions included individuals working well together, having good camaraderie, being professional, and having open communication within crews. When asked about interactions with other departments within their organization, 84 percent of employees and contractors provided positive comments, with several describing good interactions between operations and maintenance.

Positive Relationships with Management

TVA expects leaders to inspire trust and engagement by building a positive environment that motivates others to achieve and exceed organizational goals and team aspirations. We asked employees and contractors at AKC about relationships or interactions with their first-line management, middle management, and upper management. Of those who commented, approximately, 97 percent of employees and contractors commented positively on their relationship or interactions with all levels of management. Specifically, several employees indicated management is engaged, has an open door policy, is easy to talk to, is receptive to suggestions, or knows the plant well. Of those who commented, approximately, 92 percent of employees and contractors also

⁵ SHRM is a membership organization for Human Resource professionals.

indicated they trusted all levels of management and approximately 95 percent felt comfortable reporting concerns to them.

When asked about communication, of those who commented, approximately 82 percent of employees and contractors commented positively on all levels of management, with some providing examples of first-line or middle management being open, keeping everyone informed, or asking for input. Of those who commented, approximately 80 percent of employees and contractors also commented positively on all levels of management regarding accountability. Lastly, of those who commented, approximately 90 percent of employees and contractors commented positively on recognition from all levels of management. Examples of recognition included verbal recognition, High 5's,⁶ good catches, and small gifts or rewards.

OPERATIONAL FACTORS

Plant personnel expressed concerns related to (1) the plants grounding process, (2) work management, and (3) a valve that was not operating properly.

The Grounding Process

During interviews, a concern was expressed related to the grounding process at AKC. TVA-TSP-18.1008, *Temporary Protective Grounding for Generating Stations and Other Non-Transmission Facilities*, indicates live-line tools⁷ should be used when installing or removing protective grounds. It was indicated that rubber protective gloves are sometimes used instead of a live-line tool due to the angle of the wires in certain locations. However, TVA-TSP-18.1008 stated that rubber protective gloves are not considered live-line tools. We also obtained three CRs, reported between October 2019 and March 2020, related to similar issues, with one expressing safety concerns. According to the AKC plant manager, a project to address this concern was approved as part of the FY 2023 small capital project list with a plan to implement the project during the November 2022 outage.

Work Management

Forty-eight percent of employees and contractors described concerns with work packages or not having parts or materials needed to perform jobs. Specifically, some employees either described work packages at AKC as vague or described receiving a work order or package without having the necessary parts on-site to perform work. In addition, a few employees commented on the lag time in receiving parts, with one employee indicating it could take up to six months and another employee indicating sometimes parts will not arrive until halfway through an outage.

⁶ High 5 is an employee recognition program where both employees and managers can recognize and show appreciation for PO employees.

⁷ Live-line tools provide insulation between line workers and live parts or other conductors while maintaining a minimum approach distance from live power lines.

Valve Not Operating Properly

Three employees expressed concerns with a valve that was not operating properly, with two of those employees indicating that when this occurs, employees have to climb onto a ladder to manually open the valve, which they perceive as unsafe or creating more risk. Prior to our interviews, a CR dated May 1, 2022, indicated issues with a valve not opening properly and included a work order, which documented the purchase of a new gearbox to remedy the problem. We discussed this safety concern with the plant manager, who confirmed that the gearbox has been replaced and the valve is now operating properly.

CONCLUSION

AKC plays a vital role in TVA's effort to move towards a more diverse and adaptable generation portfolio by being an intermediate generation asset, which is beneficial for operating in environments with increased renewable resources, energy efficiency, and changing customer energy demand. While we identified factors that had a positive impact on AKC related to positive relationships with team members and management, plant personnel also informed us about operational concerns related to (1) the plants grounding process, (2) work management, and (3) a valve that was not operating properly. As previously noted, the valve was subsequently fixed and management is in the process of addressing the concerns related to the grounding process. Based on these factors, we assessed AKC's level of risk related to team engagement and operations as low.

RECOMMENDATIONS

We recommend the Manager, AKC:

1. Complete plans to address safety concerns related to AKC's grounding process.
2. Address concerns with work management.

TVA Management's Comments – Gas Operations' management agreed with the recommendations. In addition, management indicated AKC's work management has improved over the last three years as the result of their implemented work management strategy and Power Operations Work Management Improvement strategy. See Appendix B for TVA management's complete response.

TVA Values	
Safety	We are uncompromising in our commitment to the safety and well-being of our teammates and the communities we serve.
Service	We are proud to be of service in the communities in which we live, work, and play.
Integrity	We are honest and straightforward, always doing the right thing with integrity.
Inclusion	We treat everyone with dignity and respect – emphasizing inclusion by welcoming each person's individuality so we can reach our full potential.

TVA Leadership Competencies

Accountability and Driving for Results
Continuous Improvement
Leveraging Diversity
Adaptability
Effective Communication
Leadership Courage
Vision, Innovation, and Strategic Execution
Business Acumen
Building Organizational Talent
Inspiring Trust and Engagement

October 22, 2022

David P. Wheeler, WT 2C-K

REQUEST FOR COMMENTS – DRAFT EVALUATION 2022-17336 – ORGANIZATIONAL
EFFECTIVENESS – ACKERMAN COMBINED CYCLE PLANT

The Gas Operations leadership team would like to thank the Office of the Inspector General (OIG), specifically Andi McCarter for her diligence and support in assessing the organizational effectiveness at the site. The results of the assessment are aligned with actions Ackerman Combined Cycle (AKC) is already taking to capitalize on opportunities, learnings, and best practices.

In response to the memorandum dated September 20, 2022, Gas Operations (GO) has reviewed your draft report and have the following comments and responses.

Regarding concerns about AKC's work management process, GO agrees that there are areas for improvement, but through efforts over the past three years, AKC's work management program is much improved. The site developed a work management strategy along with the overall Power Operations Work Management Improvement strategy. With operational reliability being a reflection of work management, the site has averaged an 81.3% Equivalent Availability Factor (EAF) over the past three years since operating at 63.2% EAF in 2019.

As part of our improvement strategy, we focused on improving our workweek meetings. The meetings are conducted utilizing a standard agenda which includes reviewing work packages for adequacy, scheduling work, and reviewing work management metrics. There has also been a focus on our daily gatekeeper meeting. Work package development and material needs are determined at that time and assigned ownership. Other focus areas that have realized benefits include a more structured outage planning process, a reduction in our work order backlog, and a preventive maintenance initiative that was executed which included critical valve maintenance strategies.

Regarding the concern expressed related to the grounding process at AKC, site management has been working to address this concern and it was determined that the resolution would be to install a dual ball stud hatch assembly design for ground attachment. Approval for the capital project was granted, and the site will be executing the project in our scheduled November 2022 outage.

Recommendations

We recommend the Manager, AKC:

1. Complete plans to address safety concerns related to AKC's grounding process.

Response

Gas Operations agrees with this recommendation.

David P. Wheeler, WT 2C-K
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2. Address concerns with work management.

Response

Gas Operations agrees with this recommendation.

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



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Ackerman Combined Cycle
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