



Memorandum from the Office of the Inspector General

September 2, 2022

Kris G. Edmondson

**REQUEST FOR MANAGEMENT DECISION – EVALUATION 2022-17354 –
ORGANIZATIONAL EFFECTIVENESS – BULL RUN FOSSIL 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 Justin B. Franklin, Auditor, at (865) 633-7363 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

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

JBF:KDS

Attachment

cc (Attachment):

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OIG File No. 2022-17354



Office of the Inspector General

Evaluation Report

To the Vice President,
Coal Operations

ORGANIZATIONAL EFFECTIVENESS – BULL RUN FOSSIL PLANT

Evaluation Team
Justin B. Franklin
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Evaluation 2022-17354
September 2, 2022

ABBREVIATIONS

AUO	Assistant Unit Operator
BRF	Bull Run Fossil Plant
CR	Condition Report
FY	Fiscal Year
HR	Human Resources
O&M	Operations and Maintenance
PAF	Paradise Fossil Plant
PO	Power Operations
TVA	Tennessee Valley Authority
UO	Unit Operator

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TO DAVID P. WHEELER



Evaluation 2022-17354 – Organizational Effectiveness – Bull Run Fossil Plant

EXECUTIVE SUMMARY

Why the OIG Did This Evaluation

Organizational effectiveness, as defined in this evaluation, is the ability of an organization to achieve its mission and goals. Plant closures pose unique organizational effectiveness risks, such as operational challenges due to aging assets and the instability of the workforce due to an announced closure. This evaluation focuses on Bull Run Fossil Plant (BRF), one of five remaining fossil plants within the Tennessee Valley Authority's (TVA) coal fleet. BRF is scheduled for closure by December 2023. The objective of this evaluation was to identify factors that could impact BRF's organizational effectiveness. Additionally, the scope of this evaluation included identifying lessons learned for future coal plant closures.

What the OIG Found

During the course of our evaluation, we identified positive interactions between coworkers and with various levels of plant management. In addition, TVA's communication of BRF's retirement plans, the support provided through Power Operations' long-term workforce strategy, and having an on-site Human Resources (HR) representative were seen as positive. However, BRF employees expressed concerns related to: the ability to operate BRF until retirement due to longstanding deteriorated conditions, inadequate staffing, and increased safety risk. We also found opportunities exist to improve site-specific plant knowledge and fire brigade staffing.

What the OIG Recommends

We recommend the Vice President, Power Operations, Coal, address concerns related to BRF's operational and safety risks, including training and staffing, and risks identified regarding future plant closures.

TVA Management's Comments

TVA management agreed with the recommendations. In addition, management made both formal and informal comments to provide clarification and additional context that were incorporated as appropriate. See Appendix B for management's complete response.

BACKGROUND

Bull Run Fossil Plant (BRF) located near Oak Ridge, Tennessee, is one of five¹ remaining fossil plants within the Tennessee Valley Authority's (TVA) coal fleet and is scheduled for closure by December 2023. BRF, the only single generator coal-fired power plant within the TVA system, began operating in 1967 and as of September 30, 2021, had a net summer capability of 765 megawatts. In October 2013, BRF was designated a seasonal operating generation station,² and switched to a base load dispatchable³ site in May 2014. More recently, BRF has been scheduled to run periodically to increase BRF's reliability in order to be able to operate when needed, which, according to various TVA personnel, was intended to be primarily in peak seasons.

The TVA Board of Directors approved BRF's retirement on February 14, 2019. Subsequent to BRF's announced retirement, sixteen planned projects worth nearly \$100 million were canceled, and funding for two more projects was reduced from a combined budget of \$11.2 million to \$1.25 million. Additionally, BRF's base capital spend decreased by 77 percent between fiscal year (FY) 2019 and FY 2021. During that same timeframe, operations and maintenance (O&M) spending specific to forced outages, planned outages, and projects significantly decreased as well.

In 2020, the Senior Vice President of Power Operations (PO) formed a team to develop a long-term workforce strategy for retiring TVA coal facilities to better address changing workforce dynamics related to fossil plant employees displaced by plant closures. This long-term workforce strategy was rolled out to coal sites beginning in October 2021, and included 5-year staffing and training plans and 5-year site closure support plans. Workforce projections are developed based on staffing plans, while training plans help proactively identify training classes as staffing gaps arise and are designed to allow individuals to adequately plan for future employment. BRF's site closure support plan consisted of helping employees with (1) resume writing classes; (2) interview preparation courses; (3) overview courses on, and job shadowing in, TVA's gas and hydro sector; (4) the ability to take Edison Electric Institute⁴ testing in preparation for future roles; and (5) tours of local industries to explore career options outside of TVA. BRF was the first site closure support plan developed using this strategy.

¹ Since 2012, TVA has retired six fossil plants, including John Sevier, Widows Creek, Colbert, Allen, Johnsonville, and Paradise. As of September 30, 2021, the five operating fossil plants include Bull Run, Cumberland, Gallatin, Kingston, and Shawnee.

² Seasonal operation was defined as operating the unit during some peak market seasons such as winter and summer. For BRF, the seasonal period was defined as January to February for winter season and June to August for the summer season.

³ The unit would be available all months of the year for normal economic dispatch.

⁴ Edison Electric Institute testing is designed and validated for specific energy industry job families, including power plant operators, maintenance and craft positions, and power dispatch positions.

At the time of BRF's announced closure in 2019, BRF's staffing included 98 employees. Since then, BRF's headcount has steadily decreased and as of January 25, 2022, BRF's headcount consisted of 65 individuals, including 54 employees, 7 supervisors, 3 department managers, and the plant manager. Additionally, contractor labor began playing an integral role in operating BRF, with 61 contractors at BRF as of January 25, 2022, including 13 individuals working in operational roles.

Organizational effectiveness, as defined in this evaluation, is the ability of an organization to achieve its mission and goals. Plant closures pose unique organizational effectiveness risks, such as operational challenges due to aging assets and the instability of the workforce due to an announced closure. We previously completed an organizational effectiveness evaluation at BRF in March 2016⁵ and identified concerns related to (1) poor asset conditions, (2) long-standing safety hazards, and (3) negative impacts of corporate decisions on trust and morale such as increased contractor usage and plant closures. Due to the change in status for BRF since our previous evaluation, we scheduled a follow-up organizational effectiveness evaluation at BRF.

OBJECTIVE, SCOPE, AND METHODOLOGY

The objective of this evaluation was to identify factors that could impact BRF's organizational effectiveness. As BRF is slated for closure in 2023, the scope of this evaluation includes identifying lessons learned for future coal plant closures. We assessed generation data from TVA's operation of BRF's unit as of April 2022, and culture at the time of our interviews with BRF personnel, which occurred between March 14, 2022, and March 25, 2022. To complete the evaluation, we:

- Reviewed TVA's Coal Operations' strategy, challenges, and initiatives as of February 2022, and FY 2022 Enterprise Risk documentation to gain an understanding of risks and/or initiatives related to BRF's closure.
- Reviewed PO's long-term workforce strategy to gain an understanding of how PO is addressing the needs of displaced employees.
- Conducted interviews with 65 BRF personnel, which included management, and analyzed the results to identify themes that could affect organizational effectiveness.
- Conducted interviews with a nonstatistical sample of 46 contractors and analyzed results to identify themes that could affect organizational effectiveness.
- Conducted interviews with support staff who support BRF in areas related to engineering, safety, human resources (HR), and environmental.

⁵ Evaluation 2016-15357, *Bull Run Fossil Plant Organizational Effectiveness*, March 30, 2016.

- Reviewed BRF's unit operational data from FY 2019 through April 12, 2022, to determine if BRF was operating more than anticipated.
- Examined condition reports (CR)⁶ in Maximo⁷ documenting (1) certain equipment concerns between October 1, 2020, and June 7, 2022, (2) unit trips between October 1, 2018, and June 7, 2022, and (3) concerns with fire brigade staffing between October 1, 2018, and July 7, 2022.
- Reviewed TVA values and competencies (see Appendix A) for an understanding of cultural factors deemed important to TVA.

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

OBSERVATIONS

During our evaluation, most individuals we met with described positive interactions between coworkers and with various levels of plant management. In addition, TVA's communication of BRF's retirement plans, the support provided through PO's long-term workforce strategy, and having an on-site HR representative were seen as positive. However, BRF employees expressed concerns related to: the ability to operate BRF until retirement due to longstanding deteriorated conditions, inadequate staffing, and increased safety risk at BRF. We also found opportunities exist to improve site-specific plant knowledge and fire brigade staffing.

Positive Interactions Between Coworkers and With Management

When asked about teamwork and interactions with management, most employees and contractors responded positively. Examples of positive interactions with each other included sharing past job experiences or having a family-like atmosphere. Another factor in positive coworker interactions was that a few employees who transferred to BRF from other retired plants had previously established relationships. Nearly 70 percent of BRF employees interviewed came from previously closed TVA plants and, on average, had been working in their respective departments at BRF approximately four years as of January 25, 2022. A couple of transferred employees also attributed positive coworker interactions to employees with long-term BRF experience, with one indicating long-term BRF personnel provide guidance on jobs that may be unfamiliar to transferred employees.

In addition, as of January 25, 2022, contractors made up approximately 48 percent of the BRF workforce. In the previous BRF organizational effectiveness evaluation, increased contractor usage was described as a concern by employees; however, our interviews indicated increased contractor presence had little bearing on the ability of employees and contractors to work well with

⁶ CRs are used to document how a problem was found, analyzed, and fixed.

⁷ Maximo is TVA's Enterprise Asset Management system.

each other. Examples included employees describing contractors as knowledgeable or hardworking, and attributed the camaraderie established at the site to both groups working as one team. Examples from contractors included receiving good support from employees, such as sharing safety-related information, and feeling they all shared a common goal. One individual also indicated that there are no jurisdictional squabbles at BRF when it comes to which group is responsible for the work. A couple of individuals also commented positively on contractors being included in the health and safety meetings at BRF.

Various levels of management were also mentioned in a positive manner, with employees describing management as being knowledgeable, personable, and/or efficient in what they do, and indicating that supervisors have a genuine concern for employee safety and well-being. Several contractors also viewed management as supportive, honest, and approachable. When describing interactions with the plant manager, several employees indicated he listens to feedback, is approachable, or promotes safety at the plant. Some contractors also made positive comments about interactions with BRF's plant manager, or indicated that the plant manager is approachable and encourages them to stop work if uncomfortable.

Positive interactions between coworkers, contractors, and management suggest that individuals have not allowed the tension and anxiety that can come from working at a closing facility to affect their working relationships. This is a testament to the culture created at BRF by management, employees, and contractors alike.

Communication of BRF's Retirement and Development of Site Closure Support Plan

As part of the previous BRF organizational effectiveness evaluation, TVA management committed to communicate with employees about changes within the coal industry and plant closures at TVA. According to plant support personnel, lessons learned from previous closures have been incorporated into the BRF site closure support plan. According to the BRF plant manager, BRF holds weekly meetings to discuss information on issues, including the closure, and allows personnel to ask questions of BRF and PO management. Contractors are also included in these meetings.

Interviews indicate TVA's steps to better communicate have been successful. Many employees made positive comments about TVA's communication of BRF's retirement plans, with several employees commenting that TVA had been transparent and/or gave employees the information they needed. Several employees who transferred to BRF from retired TVA coal plants indicated that communication regarding BRF's closure was better than their previous experience or that TVA was learning from the past. According to an interview with support staff, TVA plans to use feedback from the BRF workforce to inform future site closure support plans.

Many employees also provided positive feedback when asked how TVA is preparing them for their future after BRF's closure. Specific items implemented as part of the BRF site closure support plan were mentioned positively during interviews, including resume writing and interview workshops, training, and the ability to participate in technical testing. Several individuals indicated they are thankful for the career opportunities provided by TVA and several employees at BRF already know which TVA site they will be working at after BRF closes. In addition, while developing their workforce strategy, PO identified the need for an on-site HR representative at BRF to provide assistance in implementing the strategy. Several individuals commented positively on the support provided by the workforce strategy project lead and/or the on-site HR representative.

Concerns About BRF's Ability to Operate Until Retirement

For many years, BRF has experienced significant cuts in funding of asset improvements. As noted in the previous BRF organizational effectiveness evaluation, in FY 2010 through FY 2015, BRF's average outage and capital spend was the lowest among the six remaining long-term coal assets and a history of deferred capital projects resulted in neglect of the plant. As a result of its impending retirement, BRF had sixteen projects canceled that were scheduled for FY 2020 through FY 2023 and, according to financial data obtained, experienced a significant decrease in O&M spending. As shown in the chart below, actual O&M specific to forced outages, planned outages, and projects decreased approximately 78 percent between FY 2019 and FY 2020.

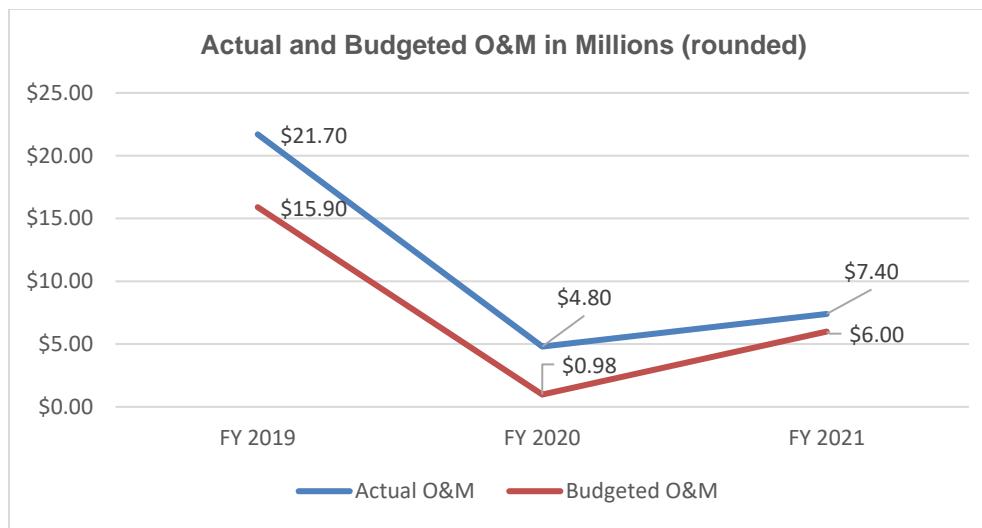


Chart 1

It is expected that retiring facilities would experience decreased funding and canceled projects. However, multiple individuals expressed concerns with the deteriorated plant condition at BRF with several indicating safety concerns resulting from the condition. Examples of these concerns included excessive

coal dust and flue gas, rotting fly ash and economizer hoppers,⁸ falling lagging and insulation,⁹ and rusted ammonia piping. We confirmed with a BRF manager that certain areas of BRF are prone to excessive coal dust and flue gas when operating. We also identified 89 CRs written between October 1, 2020, and June 7, 2022, that described issues with the hoppers, with many documenting degraded equipment conditions and a couple documenting safety hazards related to damaged equipment and leaks.

While some project and outage spending has decreased, PO has allocated funding for other maintenance. In their formal response TVA management stated, while reductions were made on longer-term investments, certain expenses were allocated in order for BRF to meet its mission. Further, management stated that, an average of \$42 million was allocated to BRF for routine O&M, shorter-term capital, and fuel handling expenditures between 2019 and 2021. See Appendix B for additional details provided in TVA management's response.

Operational Concerns

Deteriorated conditions have negatively impacted BRF's ability to operate when needed. Between October 1, 2018, and June 7, 2022, 19 CRs documented unit trips at BRF. Multiple employees expressed frustration with being requested to start BRF's unit when it was not ready to operate. Some employees also described BRF as not being able to operate more than 72 hours before equipment conditions cause the unit to shut down, or indicated the unit frequently trips. Between FY 2019 and FY 2021, BRF's operational data and CRs related to unit trips indicated seven instances where unit trips coincided with BRF operating less than 24 hours. A few employees who transferred to BRF from other retired TVA coal sites also indicated that asset condition at BRF was much worse than their previous site.

One of the reasons provided for the approval of BRF's retirement in 2019 was the deterioration of assets and the associated reliability challenges. As stated previously, BRF participates in scheduled "must runs" to make sure the plant can reliably operate when needed, primarily in peak seasons. However, BRF's operational data indicates BRF has operated 24 times outside of peak seasons since FY 2019, with approximately one third occurring in FY 2022 (as of April 12, 2022), indicating TVA has needed BRF to run more than anticipated.

Further concerns were expressed related to the availability of coal and staffing. Coal shortage concerns included a few employees perceiving that BRF cannot meet power demand beyond 20 to 30 days or that BRF did not enter into coal contracts to match the frequency of TVA's requests to operate the plant due to its impending retirement. In addition, some individuals indicated concerns with having enough staffing to effectively operate BRF. As previously described, the

⁸ A fly ash hopper collects fly ash as it exits the system in order to prevent it from escaping into the atmosphere. An economizer hopper captures large particles before they exit the boiler, including capturing large particle ash.

⁹ Lagging is heavy-duty sheet metal used to shield insulation from damage. Lagging concerns were also expressed in our previous organizational effectiveness evaluation of BRF.

workforce projections are developed based on staffing plans. According to the PO workforce strategy lead, BRF-specific projections and critical staffing thresholds were discussed with the plant manager and Vice President, PO, Coal, in December 2021. BRF's critical threshold was set as TVA annual employees comprising a minimum of 55 percent of total headcount or 64 annual employees at BRF in critical positions to operate the plant. According to the PO workforce strategy lead, the critical threshold is based on the minimum number of annual employees needed to operate the plant.

As of January 25, 2022, BRF annual employees accounted for approximately 52 percent of the headcount, which was below TVA's defined critical threshold percentage. By June 7, 2022, the percentage of TVA employees at BRF had decreased to approximately 41 percent of total headcount and six positions (electrician, senior instrument mechanic, unit operator (UO), maintenance foreman, laborer foreman, and assistant PO manager) were below the critical threshold. According to a December 2021 TVA presentation, *Coal Operations Assistant Unit Operator/Unit Operator Staffing Projections and Recommendations*, falling below critical staffing thresholds for UOs and assistant unit operators (AUOs) increases the risk to plant operations and safety, however it does not address what happens when staffing falls below the critical threshold.

To address staffing risks, TVA executed two memorandums of understanding with the International Brotherhood of Electrical Workers. One memorandum allows staff augmented contractors that did not go through TVA's training programs to serve as AUOs, while the other allows AUOs to perform scrubber duties currently performed by UOs so that the main control room can be staffed by UOs. Just prior to beginning our interviews, TVA also began a pilot program to pay employees at BRF to stay through closure for employees in critical, high risk positions, as determined by the plant manager and Coal VP. These actions may help alleviate some staffing concerns.

Safety Concerns

Running a plant with deteriorated assets more than planned has led to safety concerns. Multiple employees indicated that physical safety is at risk and a recent safety event has increased these concerns. The plant condition concerns described earlier, including excessive coal dust and flue gas, the hoppers, and falling lagging and insulation, are viewed as safety concerns by some employees. Specific to lagging, multiple individuals expressed concerns that BRF personnel are at increased risk of injury due to falling lagging at the plant. Safety hazards related to lagging were also noted in our previous BRF organizational effectiveness evaluation as a "long-standing safety hazard." During a site visit, we observed missing lagging and exposed insulation on the selective catalytic reduction system¹⁰ (see Photo 1 and Photo 2 on the following page), and degraded ammonia piping (see Photo 3 on page nine). We confirmed with management that when operating, the odor of ammonia is present in the

¹⁰ Selective catalytic reduction is an air pollution control technology where nitrogen oxides formed in the coal combustion process are removed by the injection of ammonia into the flue gas.

area. Ammonia can be toxic and poses risks to humans through various types of exposures.



Photo 1



Photo 2

**Photo 3**

In addition, some concerns were expressed with the lack of knowledge or experience specific to BRF since BRF consists of many employees from other retired TVA coal sites. Some employees believe this lack of knowledge or experience has increased safety risk. According to a few employees, BRF has a positive pressure boiler, which makes facets of its operation unique. Examples of concerns included individuals not knowing the danger associated with some jobs, individuals feeling uncomfortable doing jobs and individuals not having trainers or experienced staff to consult with before doing certain jobs. We reviewed PO's long-term workforce strategy, which includes training plans for displaced employees, but did not identify any training that would be site-specific. While BRF has standard departmental procedures for transitional training for both AUO and UO transfers, some concerns were still expressed with the lack of knowledge or experience specific to BRF. A few concerns were also expressed with the inability to have fully staffed fire brigade support,¹¹ which is filled by BRF Operations' personnel. According to the BRF Plant Manager, TVA procedure requires a CR to be written for every shift that does not have the required personnel to fill a fire brigade team. A review of CRs from October 1, 2018, through July 7, 2022, showed there were multiple CRs written documenting

¹¹ Fire brigade personnel serve as emergency responders.

inadequate fire brigade staffing at BRF. BRF's contingency plan is to call the local fire department if an emergency arises.

CONCLUSION

Interactions between BRF employees, contractors, and management, as well as TVA's communication of BRF's retirement, the preparation for future opportunities after closure, and having an on-site HR representative were viewed as positive. In our opinion, the strategy used by plant management to establish a healthy workplace culture at BRF despite staff and operational challenges should be modeled by other TVA plants facing retirement. However, operating under deteriorated conditions can increase the operational risk and safety risk to BRF personnel. As indicated earlier, minimal funding and canceled projects are to be expected at retiring facilities. However, according to a 2021 Scott Madden report, *Coal's Accelerated Burn: A Management Guide to Coal Plant Decommissioning*, safe and efficient operations should still be the top priority even during the closure process. Like BRF, Paradise Fossil Plant (PAF) was also approved for retirement in 2019. PAF's retirement date was December 2020, but TVA chose to cease operations at PAF in February 2020 due to the condition of the plant. If TVA continues to operate BRF until its approved retirement date of December 2023, operational and safety risks should be evaluated.

The two plants TVA has recently proposed to retire, Kingston Fossil Plant and Cumberland Fossil Plant, have multiple units and consistently contribute to TVA's power generation in the Valley. Due to their respective size and TVA's reliance on them for power generation, issues with safety and reliability can have a critical impact to plant personnel and the Tennessee Valley. As such, TVA should use BRF as an example to evaluate the planned generation for those units in order to fund and staff those plants accordingly. By doing this, TVA can significantly reduce not only the risk to maintaining reliability, but the safety risk to their employees and contractors.

RECOMMENDATIONS

We recommend the VP, PO, Coal:

1. Continue implementation of the long-term workforce strategy at future retiring sites and develop contingency plans to address the potential that workforce risks are realized at future retiring sites.
2. Work with the Executive Vice President, Chief People and Communications Officer, to assess the need for on-site HR support for future plant closures.
3. Evaluate the operational and safety risks resulting from deteriorated asset condition and dropping below critical staffing thresholds, and mitigate the risks as necessary.
4. Address training concerns related to site-specific plant knowledge at both BRF as well as other future closing plants.
5. Ensure newly-hired operations personnel are provided training necessary to be qualified BRF fire brigade members.

TVA Management's Comments – TVA management agreed with the recommendations. 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.
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.
Service	We are proud to be of service in the communities in which we live, work, and play.

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

August 18, 2022

David P. Wheeler, WT 2C-K

**REQUEST FOR COMMENTS – DRAFT EVALUATION 2022-17354 – ORGANIZATIONAL
EFFECTIVENESS – BULL RUN FOSSIL PLANT**

The Bull Run leadership team would like to thank the Office of the Inspector General (OIG), specifically Justin Franklin, Jessica Monroe, and Lisa Hammer for their diligence and support in assessing the organizational effectiveness at the site. The results of the assessment are aligned with actions Bull Run Fossil Plant (BRF) is already taking to capitalize on opportunities, learnings, and best practices for BRF and future plant closures.

In response to the memorandum dated July 18th, 2022, Power Operations (PO) has reviewed OIG's draft report and would like to clarify and provide additional context for some of the observations identified in the draft report.

Regarding concerns about BRF's ability to operate until retirement, PO agrees that funding reductions from FY2010 through FY2015 have increased reliability risks due to condition issues, most notably in the boiler. During this time, the unit ran infrequently and incurred long periods of shut down time which increased the out of service corrosion condition issue in the water wall section of boiler tubes. Today, this is the most significant driver for reliability issues on the unit, though not running frequently on a super critical unit such as BRF presents increased reliability risks for other components too.

As a result of impending retirement, PO did elect to only invest in capital / OM projects that would provide positive payback while prioritizing safe and environmentally compliant operations. For example, a significant increase in proactive OM repairs (\$8M) were completed in the water wall section of the boiler where many of the reliability issues have originated, while a ~\$40M boiler upper deflection arch boiler project was cancelled. While reductions were made on longer term investments, PO did ensure that routine operations, maintenance, shorter term capital and fuel handling expenses were allocated so BRF could meet its mission (average ~\$42 M / YR – 2019-2021).

At the same time, however, PO has prioritized and executed projects to support environmental compliance and safe operations at the site. Scopes of work included: vibration monitoring on the steam turbine – generator rotors, full inspection of the low pressure (LP) steam turbine rotors to address extent of condition with rotor cracks identified with PAF 3 rotors, replacement of the feedwater and attemperator control valve actuators to minimize access to hot area, environmental catalyst replacement, significant environmental precipitator work, expansion joint inspections and replacements to minimize furnace gas leaks, and pulverizer overhauls.

PO has also increased funding to support coal dust mitigation at BRF and across the coal fleet (~\$2.0 M / year) over the 3-year period noted. Because BRF has a positive pressure furnace, coal dust and furnace gas leaks are more prevalent than other sites, so additional efforts are needed to manage risks. All duct leaks and expansion joints continue to be inspected monthly and work orders with associated repairs are completed to minimize leaks. Deteriorated lagging is a condition issue that we inspect and make repairs to address loose lagging identified.

David P. Wheeler, WT 2C-K
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Ammonia piping and associated safety requirements are managed through our anhydrous ammonia program, and we have independent assessments completed periodically to assess condition and recommend repairs. Active work order generation (89 work orders in 10/20-7/22) is an indicator of healthy work management where condition issues are being identified, worked, and closed out.

PO agrees that operational reliability at BRF has been a challenge and at times frustrating for our employees who work so hard to meet the mission. Their efforts continue to pay off as BRF has met its reliability target each year while supporting high loads during peak periods. In January 2022, PO developed a must-run profile to improve reliability by preventing the unit from staying idle for longer periods of time and a detailed start-up playbook that employs additional support personnel. Both actions have improved the site's start up success and unit reliability.

Staffing challenges at BRF have been significant, and we continue to leverage retention agreements and other incentives such as travel status offered to employees previously working at Paradise Fossil Plant. We continue to work with union partners on opportunities to successfully cover the work and retain knowledge as we also support team members with next steps for their future. PO values transparency with employees on retirement plans and communication. Giving our team members four years advance communication on the site's retirement has led to accelerated attrition. While it is good and expected that employees are getting other jobs in TVA, it presents staffing challenges for the plant. PO would like to recognize our entire BRF team for their continued efforts to support the site's mission. PO also appreciates the teamwork across the site by contractors and employees and the willingness to always raise safety or operational concerns and issues so that we can continually improve.

The recommendations provided by this assessment align well with actions PO and BRF leadership are taking to proactively address employee concerns and material condition issues. These are fundamental to our approach to plant operations. We are pleased that the OIG's recommendations present no new findings but reinforce focus areas that will be beneficial for BRF remaining life and other coal site closures.

Recommendations

We recommend the VP, PO, Coal:

1. Continue implementation of the long-term workforce strategy at future retiring sites and develop contingency plans to address the potential that workforce risks are realized at future retiring sites.

Response

Power Operations agrees with this recommendation.

2. Work with the Executive Vice President, Chief People and Communications Officer, to assess the need for on-site Human Resources (HR) support for future plant closures.

Response

Power Operations agrees with this recommendation.

APPENDIX B
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3. Evaluate the operational and safety risks resulting from deteriorated asset condition and dropping below critical staffing thresholds and mitigate the risks, as necessary.

Response

Power Operations agrees with this recommendation.

4. Address training concerns related to site-specific plant knowledge at both BRF as well as other future closing plants.

Response

Power Operations agrees with this recommendation.

5. Ensure newly-hired operations personnel are provided training necessary to be qualified BRF fire brigade members.

Response

Power Operations agrees with this recommendation.

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



Kris G. Edmondson
Vice President
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