Memorandum from the Office of the Inspector General

September 24, 2020

Anthony L. Williams IV

FINAL REPORT – EVALUATION 2020-15718 – ORGANIZATIONAL EFFECTIVENESS – WATTS BAR NUCLEAR PLANT RADIATION PROTECTION

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

If you have any questions, 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
Assistant Inspector General
(Audits and Evaluations)

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cc (Attachment):
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OIG File No. 2020-15718

Office of the Inspector General

Evaluation Report

To the Vice President,
Watts Bar Nuclear Plant

ORGANIZATIONAL EFFECTIVENESS – WATTS BAR NUCLEAR PLANT RADIATION PROTECTION

Auditor
Justin B. Franklin

Evaluation 2020-15718
September 24, 2020

ABBREVIATIONS

ALARA	As Low as (is) Reasonably Achievable
CWE	Chilled Work Environment
FY	Fiscal Year
NRC	Nuclear Regulatory Commission
RP	Radiation Protection
TVA	Tennessee Valley Authority
WBN	Watts Bar Nuclear Plant

TABLE OF CONTENTS

APPENDICES

Evaluation 2020-15718 – Organizational Effectiveness – Watts Bar Nuclear Plant Radiation Protection

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. 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 the Watts Bar Nuclear Plant (WBN) Radiation Protection (RP) organization, which is an organization within TVA Nuclear.

WBN RP is responsible for conducting activities in ways that protect the radiological health of workers and the public by keeping radiation doses as low as (is) reasonably achievable (ALARA). The objective of this evaluation was to identify factors that could impact WBN RP's organizational effectiveness. Specifically, we identified behavioral and operational factors that affect organizational effectiveness.

What the OIG Found

During the course of our evaluation, we identified behaviors that had a positive impact on WBN RP. However, we also identified a behavior that could negatively affect WBN RP. Specifically, we identified a behavioral risk related to accountability that, if left unaddressed, could impact WBN RP's effectiveness and its continued ability to meet its responsibilities in support of WBN's mission. We also identified operational positives regarding WBN RP's working relationship with outside departments and having enough resources to do the work. Based on our observations, we assessed WBN RP's level of risk related to behaviors and operations and determined risk to behaviors was high while risk to operations was low. Ratings are reflected in the table below:

	Low Risk	Medium Risk	High Risk
Behaviors			X
Operations	X		

What the OIG Recommends

We recommend the Vice President, WBN, address the risks related to accountability as identified in this report.

EXECUTIVE SUMMARY

TVA Management's Comments

TVA management described actions taken to address our recommendation. See Appendix B for TVA management's complete response.

Auditor's Response

We agree with management's actions taken.

BACKGROUND

Organizational effectiveness, as defined in this evaluation, is the ability of an organization to achieve 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 Tennessee Valley Authority (TVA). This evaluation focuses on the Watts Bar Nuclear Plant (WBN) Radiation Protection (RP) organization, which is an organization within TVA Nuclear.

WBN RP is responsible for conducting activities in ways that protect the radiological health of workers and the public by keeping radiation doses as low as (is) reasonably achievable (ALARA). According to the Nuclear Industry Standard Process RP-011, *Radiation Protection Fundamentals*, Radiological Protection professionals achieve protection of plant personnel and the public by implementing a robust program that includes a strong foundation of fundamentals and a culture that strives for continuous improvement. WBN RP consists of four departments: RP, ALARA Support, Technical Support, and Radwaste.

- RP personnel are responsible for implementing the field aspects of the RP program, providing direction and oversight for control measures concerning personnel exposure to radioactive materials and associated radiation during both routine nuclear operations and emergency situations, ensuring the provision of technical expertise in the areas of radiological surveillances in the field as well as radiological monitoring and assessment, ensuring that all maintenance and operational activities are conducted ALARA, and in a safe and efficient manner.
- The ALARA Support department's main objective is to minimize radiation exposure to employees and the public. The department's responsibilities include implementing the station ALARA program through the activities of ALARA planning or using techniques such as lead shielding,[1] flushing,[2] and technology to reduce radiation exposure and independently applying standard health physics techniques, procedures, and criteria using judgement in the development of technical solutions and programs.
- The Technical Support department has responsibilities that may include maintaining radiation exposure records as well as radiation monitoring equipment. The department also helps with the development and implementation of the site RP program for dosimetry,[3] respiratory protection, and RP's instrument calibration, functional test, and control.

[1] Lead shielding is a barrier that provides protection from penetrating radiation such as gamma rays and neutrons.

[2] Flushing is a way to reduce hotspot build up.

[3] The theory and application of principles and techniques involved in measuring and recording doses of ionizing radiation.

- The Radwaste department is comprised mainly of Radwaste Shippers and Laborers and ensures compliance with Nuclear Regulatory Commission (NRC) regulations for packaging, characterization, classification, and physical form determination of the material, including the Department of Transportation regulations for shipment and NRC/Department of Transportation security plan requirements.

In a 2018 inspection report, the NRC noted WBN RP as having a chilled work environment (CWE). According to the NRC, a CWE exists when employees perceive that raising safety concerns to their employer or to the NRC is suppressed or discouraged because of an event, interaction, decision, or policy change. In their report, the NRC stated that 25 percent of employees interviewed in the WBN RP organization believed they would be retaliated against if they raised certain concerns. The NRC also stated that multiple individuals perceived an adversarial relationship within the department, such that some personnel were labeled as being for management, some labeled as being against management, and both groups were in conflict with each other. As such, according to the NRC, fears of retaliation were not limited to raising nuclear safety concerns, but for any behaviors that were in conflict with one group or the other.

Subsequent to the NRC's identification of a CWE, a new senior manager was hired for WBN RP. In a March 2019 Problem Identification and Resolution Inspection, the NRC observed indications that the work environment in RP was improving. However, the NRC also noted that the environment in RP was still fragile due to the recent personnel changes, the in progress implementation of a work environment improvement plan, and a planned revision to the root cause analysis of the RP CWE that could include additional causes and corrective actions.

As of March 10, 2020, WBN RP consisted of 42 individuals that included 29 employees, 7 supervisors,[4] 4 superintendents, a senior secretary, and the senior manager.

OBJECTIVE, SCOPE, AND METHODOLOGY

The objective of this evaluation was to identify factors that could impact WBN RP's organizational effectiveness. We assessed operations as of May 2020 and culture at the time of our interviews and fieldwork, which occurred between April 6, 2020, and April 13, 2020. To complete the evaluation, we:

- Reviewed (1) TVA Nuclear's FY 2020 through FY 2022 business plan, (2) TVA's FY 2019 Strategic Business Unit/Business Unit Risk Assessment Summary, and (3) NRC Integrated Inspection Reports from 2018 and 2019 that were specific to WBN RP to gain an understanding of WBN RP's initiatives, risks, and/or metrics.

[4] One of the supervisors returned to the role of an employee by the time our interviews were conducted.

- Reviewed the (1) 2018 NRC report identifying a CWE in WBN RP, (2) NRC Safety Confirmatory Order follow-up for March 2019, (3) July 2019 Nuclear Quality Assurance elevation report, and (4) October 2019 letter from TVA to the NRC, notifying that TVA was ready for an independent NRC review regarding the CWE. These documents were reviewed to gain further understanding of past work environment issues.
- Reviewed TVA values and competencies (see Appendix A) for an understanding of cultural factors deemed important to TVA.
- Reviewed Nuclear Industry Standard Processes and Nuclear Power Group Standard Programs and Processes to gain an understanding of processes relevant to WBN RP.
- Conducted individual interviews with 41 of 42[5] individuals, including management, and analyzed the results to identify themes related to factors that could affect organizational effectiveness.
- Conducted interviews with two former members of WBN RP management who left the department prior to our interviews to gain further understanding of WBN RP culture and operations.
- Conducted interviews with seven contractors in RP due to concerns expressed in employee interviews.
- Surveyed and/or interviewed a nonstatistical sample of 73 individuals from other WBN organizations that have interactions with WBN RP personnel and analyzed results to identify factors affecting organizational effectiveness from a business partner perspective.
- Assessed the overall effectiveness of WBN RP in behavioral and operational aspects based on TVA's Business Operating Model.

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 the course of our evaluation, we identified behaviors that had a positive impact on WBN RP. However, we also identified a behavior that could negatively affect WBN RP. Specifically, we identified a behavioral risk related to accountability that, if left unaddressed, could impact WBN RP's effectiveness and its continued ability to meet its responsibilities in support of WBN's mission. We also identified operational positives regarding working well with outside departments and having enough resources to do the job.

[5] According to TVA, one employee in our headcount was no longer within RP, but was in a communications role with the union. Consequently, the employee was not interviewed during our field work.

BEHAVIORS HAVING A NEGATIVE IMPACT ON WBN RP

According to the Society for Human Resource Management (SHRM),[6] employee engagement relates to the level of an employee's connection and commitment to the organization. In addition, SHRM specifies drivers of employee engagement, including commitment of leaders, trust in leadership, and positive relationships with supervisors. TVA, in its Business Operating Model, states that engagement is one component of effective execution. TVA has also 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. Furthermore, the Nuclear Operating Model states that "Employee engagement is a workplace approach resulting in the right conditions for all members of an organization to give of their best each day, committed to their organization's goals and values, motivated to contribute to organizational success." Based on interviews with individuals within WBN RP, we determined behavior-related risk was high due to concerns related to accountability.

We noted positive feedback pertaining to management relationships, trust, communication, and interactions with coworkers among RP personnel. Most employees indicated they had a positive relationship with all levels of their management. We also noted that, when asked what works well in their area, responses provided by some employees were in relation to their management or leadership. Examples provided by some employees included management trying to make people feel valued and being willing to support employees.

Most employees in WBN RP indicated that they trusted all levels of their management. In addition, most employees felt comfortable going to their management with a concern or difference of opinion. Individuals also gave examples of management having their back and the senior RP manager putting employees in a spot where they can succeed.

When asked about communication, most employees in WBN RP indicated that communication was positive with their management. An example of positive communication was employees being given the reasons behind decision making.

Most employees also indicated that there were positive interactions among coworkers in WBN RP. Most individuals also indicated that they trusted their coworkers to do their jobs. Further, positive comments were made regarding interactions among WBN RP personnel when individuals were asked about what is working well in the organization. Examples provided were people working together as a team and coworkers getting along.

[6] SHRM is a membership organization for Human Resource professionals.

While feedback pertaining to management relationships, trust, communication, and teamwork among RP employees was primarily positive, nearly 28 percent of the individuals we interviewed, including both current and former members of RP supervision as well as employees, discussed risks related to accountability concerns. For example, a couple of individuals indicated that it seems RP management does not hold those who do not do their work accountable or that there are no repercussions for failing job related training. It was also indicated that management will not assign work to certain RP employees, or will remove them from certain jobs so their responsibilities become minimal because management does not feel comfortable with their work ability. Further, a couple of individuals indicated a perceived lack of confidence regarding some technicians' ability to adequately protect plant employees from radiological exposure.

Some employees, including current and former members of RP supervision, indicated their perception that RP senior management may be hesitant to hold people accountable due to the CWE. In an October 2019 letter from WBN management to the NRC, it was stated that a direct cause for the station's inability to detect trends in a declining safety culture and mitigate a CWE was that "some RP superintendents and supervisors did not have the leadership courage and skills to act upon behaviors contrary to TVA's Code of Conduct."

In July 2019, Nuclear Quality Assurance issued an elevation report to WBN RP. Contributing to the elevation, the report said that RP leaders did not identify performance gaps or enforce procedure requirements while providing direct oversight of radiological work. Further, a condition report was written regarding the elevation and provided an example that included a lack of coaching related to employee work performance. According to the condition report, corrective actions had been completed and the condition report was closed on January 22, 2020.

Some individuals indicated that employees may use the CWE to their advantage as a way to keep from being held accountable by their management or to avoid work. One example provided of an employee claiming the work environment was chilled when informed of a schedule change to support a plant outage. Further, it was perceived by a member of RP management that RP senior management wants the CWE to go away to the point of not wanting to know about problems occurring.

WBN RP, as part of TVA Nuclear, is responsible for conducting activities in ways that protect the radiological health of plant personnel, as well as the public. While many individuals provided positive comments related to engagement, in our opinion, the accountability issues identified above increase the risk that these behaviors may negatively impact WBN RP's organizational effectiveness and their ability to protect the radiological health of plant personnel. Failure to adequately address these concerns could hinder WBN RP from achieving its responsibility.

OPERATIONAL FACTORS HAVING A POSITIVE IMPACT ON WBN RP

Based on our interviews, we identified operational positives related to working with outside departments and having enough resources to do the job. Further, we noted positive feedback from those in outside departments that we surveyed regarding their working relationship with WBN RP.

Most individuals from both management and employees, mentioned that they had positive working relationships with departments outside of WBN RP. Of those who responded to our survey from outside departments who have interactions with WBN RP, most indicated they had a positive working relationship with WBN RP. Most individuals surveyed indicated that WBN RP provided quality feedback and communication, was timely to their requests, and commented positively on the service WBN RP provides the station.

In addition, both employees and management alike indicated that they felt they had the necessary resources to do their job. Specifically, individuals mentioned that WBN RP has implemented technology upgrades. An example that was given regarding technology upgrades was 3D mapping, which helps in identifying high radiation areas.

CONCLUSION

WBN RP has an important role in protecting the radiological health of workers and the public by keeping doses as low as possible. To execute this role effectively, it is necessary for employees to be connected and committed to the organization. While interviews with employees revealed positive management relationships, trust, and good communication, interviews also disclosed a behavioral risk related to accountability. Addressing this risk can better provide for the radiological safety of WBN employees and the public.

RECOMMENDATIONS

We recommend the Vice President, WBN, address the risk related to accountability.

TVA Management's Comments – Management stated they have recently conducted an RP leadership team off-site meeting to align on the expectations for accountability and behaviors that support a healthy nuclear safety culture. This included a review of the TVA accountability model to ensure the team understood the requirements and importance of continuously applying the model to drive performance of the RP department. In addition, management conducted Advancing Leadership Training with all RP supervisors to help supervisors in identifying and communicating worker performance gaps.

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

TVA Values	
Safety	We share a professional and personal commitment to protect the safety of our employees, our contractors, our customers, and those in the communities that we serve.
Service	We are privileged to be able to make life better for the people of the Valley by creating value for our customers, employees, and other stakeholders. We do this by being a good steward of the resources that have been entrusted to us and a good neighbor in the communities in which we operate.
Integrity	We conduct our business according to the highest ethical standards and seek to earn the trust of others through words and actions that are open, honest, and respectful.
Accountability	We take personal responsibility for our actions, our decisions, and the effectiveness of our results, which must be achieved in alignment with our company values.
Collaboration	We are committed to fostering teamwork, developing effective partnerships, and valuing diversity as we work together to achieve results.

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

Tennessee Valley Authority, 1270 Watts Bar Nuclear Plant Rd, Spring City, Tennessee 37381

September 18, 2020

To: David P. Wheeler, Assistant Inspector General

From: Bradley R. Boyer, Sr Manager, Radiation Protection

Re: Organizational Effectiveness Response to OIG Evaluation 2020-15718

We agree with the recommendation provided that action was needed to improve the accountability behaviors of the RP leadership team.

Our response:
We conducted a RP Leadership Team offsite meeting on September 10, 2020 to align on the expectations for accountability and the behaviors that support a healthy nuclear safety culture. We went over the TVA accountability model to ensure the team understood the requirements and had an understanding of the importance of applying the model continuously to drive the performance of the RP department.
Additionally, we conducted Advancing Leadership Training with all our supervisors. This interactive training is helping the supervisors' skill in identifying and communicating worker performance gaps. This will help the department see, understand, and own their performance issues which will improve accountability.