



Memorandum from the Office of the Inspector General

September 24, 2020

Allen A. Clare
Preston P. Pratt

REQUEST FOR FINAL ACTION – EVALUATION 2019-15685 – GAS PLANT OVERTIME

Attached is the subject final report for your review and final action. Your written comments, which addressed your management decision and actions planned or taken, have been included in the report. Please notify us when final action is complete. 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 Samuel L. Ruble, Senior Auditor, Evaluations, at (865) 633-7384 or E. David Willis, Director, Evaluations, at (865) 633-7376. We appreciate the courtesy and cooperation received from your staff during the evaluation.

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

SLR:FAJ
Attachment
cc (Attachment):

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OIG File No. 2019-15685



Office of the Inspector General *Evaluation Report*

To the Vice President, Power Operations,
Gas and Hydro; and the Director, Safety
and Enterprise Improvement

GAS PLANT OVERTIME

ABBREVIATIONS

FTE	Full-Time Equivalent
FY	Fiscal Year
OSHA	Occupational Safety and Health Administration
PO	Power Operations
SPP	Standard Programs and Processes
TVA	Tennessee Valley Authority

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MEMORANDUM DATED SEPTEMBER 22, 2020, FROM ALLEN A. CLARE
AND PRESTON P. PRATT TO DAVID P. WHEELER



Evaluation 2019-15685 – Gas Plant Overtime

EXECUTIVE SUMMARY

Why the OIG Did This Evaluation

The Tennessee Valley Authority (TVA) currently operates 101 natural gas- and fuel oil-fired generators at 17 sites. In fiscal years (FY) 2018 and 2019, 323 employees at TVA’s gas plants worked 318,903 hours of overtime and were paid \$24.5 million.ⁱ

TVA Standard Programs and Processes 18.018, *Fatigue Management*, outlines established “. . . controls to provide reasonable assurance that the effects of fatigue and degraded alertness do not impact an individual’s ability to safely and competently perform their duties.” Due to the high amounts of overtime worked at some gas plants, we conducted an evaluation to assess TVA’s management of overtime at gas plants.

What the OIG Found

We determined significant amounts of overtime were worked by employees at some gas plants. Specifically, we determined 69 percent (221,517 hours) of the 318,903 hours of overtime was performed at 7 of the 17 plants. The overtime worked at these 7 plants was the equivalent of 51 full-time employees. We also determined some employees worked significant amounts of overtime. For example, we found 51 instances during FYs 2018 and 2019 where employees worked over 1,000 hours of overtime and 2 of these employees had nearly 2,000 hours of overtime in a single year. Additionally, we determined TVA may not be accurately capturing the effects of fatigue because (1) fatigue assessments are no longer required when significant overtime is worked, and (2) fatigue data is not trended with health and safety data in TVA’s medical case management system.

What the OIG Recommends

We recommend TVA management take action to address the amount of overtime performed at TVA’s gas plants and capture the effects of fatigue on employees working significant amounts of overtime.

ⁱ We calculated overtime hours and payments based on the FY in which the overtime was paid.



Evaluation 2019-15685 – Gas Plant Overtime

EXECUTIVE SUMMARY

TVA Management's Comments

In response to our draft report, TVA management agreed with our recommendations. However, regarding limiting the amount of hours employees can work, management stated overtime policies are dictated by the General Agreement and any change to the overtime procedure, including a cap on hours worked, would require TVA and union re-negotiation of the existing contract. See the Appendix for TVA's complete response.

Auditor's Response

While we agree the efforts to adjust the overtime policies that are dictated by the General Agreement could be difficult, TVA management must take great care to ensure personnel safety is not compromised due to fatigue caused by excessive overtime.

BACKGROUND

The Tennessee Valley Authority (TVA) currently operates 101 natural gas- and fuel oil-fired generators at 17 sites. Together, they have a generation capacity of over 12,000 megawatts—enough to power about seven million homes. TVA needs some employees to work overtime to be able to continually operate the gas plants. During fiscal years (FY) 2018 through 2019, 323 gas plant employees worked 318,903 hours of overtime and were paid \$24.5 million.

In accordance with the Department of Labor's Fair Labor Standards Act, TVA incurs overtime expenses when eligible employees perform work in excess of 40 hours per week.¹ TVA is also obligated to make overtime payments in compliance with requirements outlined in various union agreements. TVA has a formal rotation to distribute overtime assignments using a "call list" based on a trades and labor agreement. The overtime list is utilized to facilitate equitable distribution of overtime among employees in work groups. TVA's gas fleet utilizes a work schedule with an alternating 48-hour workweek followed by a 36-hour workweek. This shift schedule automatically creates 16 hours of built-in overtime per employee each month.

TVA-SPP-18.018, *Fatigue Management*, outlines established ". . . controls to provide reasonable assurance that the effects of fatigue and degraded alertness do not impact an individual's ability to safely and competently perform their duties." Additionally, the Occupational Safety and Health Administration (OSHA) provides standards that govern employee safety in the workplace. OSHA and several other organizations provide overtime-related best practices that highlight numerous adverse effects of excessive work hours including:

- Personal health risks for employees involved.
- Counter-productive results due to increased absenteeism and turnover.
- Decreased overall productivity due to stress and fatigue.
- Increased overall safety/accident risk.

Due to the high number of overtime hours worked, we performed an evaluation of overtime at gas plants.

OBJECTIVE, SCOPE, AND METHODOLOGY

The objective of this evaluation was to assess TVA's management of overtime at gas plants. The scope of the evaluation was overtime hours worked² and paid at gas plants by TVA employees during FYs 2018 through 2019. To achieve our objective, we:

¹ According to TVA Standard Programs and Processes (SPP) 13.029, *Pay*, paid absences, such as sick leave and annual leave, are counted the same as work time in determining eligibility for overtime pay."

² We calculated overtime hours and payments based on the FY in which the overtime was paid.

- Reviewed relevant regulations and TVA procedures³ related to overtime at gas plants to gain an understanding of overtime requirements.
- Interviewed TVA personnel to better understand the process of how overtime is managed at the different plants.
- Obtained overtime hours worked at gas plants and performed various analyses (e.g., summarizing total overtime hours/costs incurred by plant, individual, overtime codes) to assess any areas with increased risks.
- Selected a sample of 62 of 323 employees who worked overtime by identifying the 25 employees with the most overtime earnings for each of the following time frames: (1) annually, (2) semiannually, (3) quarterly, and (4) biweekly. We interviewed 57⁴ employees and their 13 responsible managers/supervisors for a total of 70 interviews to gather information related to the management of overtime and safety incidents at the plants.
- Identified 31 employees whose overtime was approved by someone other than the employees' supervisors to determine if overtime worked was approved in accordance with procedures.
- Identified 14 employees involved in safety related incidents and reviewed overtime hours worked prior to the incident, or if the employee was on overtime when the incident occurred, to determine if a correlation existed between incidents and overtime.⁵
- Compared TVA's current process for managing overtime to best practices identified by federal agencies.
- Obtained overtime related grievances filed with TVA's Labor Relations department to determine if there were any trends related to overtime.

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

FINDINGS

We determined significant amounts of overtime were worked by employees at some gas plants. Specifically, we determined 69 percent (221,517 hours) of the 318,903 hours of overtime was performed at 7 of the 17 plants. The overtime worked was the equivalent of 51 full-time employees. We also determined some employees worked significant amounts of overtime. For example, we found 51 instances during FYs 2018 and 2019 where employees worked over

³ One of the procedures, TVA-SPP-18.018, Fatigue Management, initially required fatigue evaluations to be performed when an employee worked more than 72 hours in any given week. However, the SPP was later revised in 2018 and the 72-hour threshold trigger was removed.

⁴ We did not interview all of the employees because of COVID-19 pandemic precautions and 1 employee retired during the interview phase of the evaluation.

⁵ Three of the 14 employees were in our sample of 62; we asked additional questions to either the responsible manager or the employee to further assess if these incidents were overtime or fatigue related.

1,000 hours of overtime and 2 of these employees had nearly 2,000 hours of overtime in a single year. Additionally, we determined TVA may not be accurately capturing the effects of fatigue because (1) fatigue assessments are no longer required when significant overtime is worked, and (2) fatigue data is not trended with health and safety data in TVA's medical case management system.

SIGNIFICANT AMOUNTS OF OVERTIME WERE WORKED AT SOME GAS PLANTS

We determined significant amounts of overtime were worked by employees at some gas plants. Specifically, we determined (1) overtime hours worked at 7 of the 17 plants was equivalent to 51 full-time employees, and (2) some individual employees worked significant amounts of overtime based on the hours worked over annual, semiannual, quarterly, and weekly time frames. Potential causes for the significant overtime included (1) inadequate staffing levels, (2) forced outages and equipment reliability, and (3) the lack of a policy limiting overtime.

Overtime Worked at Some Plants Was Equivalent to 51 Full-Time Employees

During FYs 2018 and 2019, 318,903 hours of overtime were worked at TVA's gas plants. Sixty-nine percent (221,517) of the 318,903 hours of overtime was performed at 7 of the 17 plants. This was the equivalent of 51 full-time employees. Figure 1 below shows the average number of overtime hours for the 7 plants and the comparable annual full-time equivalents (FTE) that could be hired to decrease the amounts of overtime worked at the plants.

**Overtime Hours for
FYs 2018 and 2019 and Potential FTEs**

Gas Plant	2-Year Total Overtime Hours	Employees Onsite at End of FY 2019	Potential FTEs That Could Be Hired
Southaven CC ⁶	36,000	25	8
Paradise CC	34,306	27	8
Magnolia CC	34,007	25	8
Johnsonville CT ⁷	33,530	29	8
Allen CC	30,539	25	7
Ackerman CC	27,037	19	6
Lagoon Creek CC	<u>26,098</u>	<u>20</u>	<u>6</u>
Total	221,517	170	51

Figure 1

In addition, we analyzed the overtime by quarter for each of the 7 plants with the most overtime to determine if overtime was being consistently utilized or if it was occurring erratically. Figure 2 below shows, while there were spikes during

⁶ CC refers to combined cycle generating plant.

⁷ CT refers to combustion turbine generating plant.

various quarters, there was a consistent, high level of overtime worked each quarter that could indicate additional staffing is needed.

FYs 2018 and 2019 Hours by Quarter

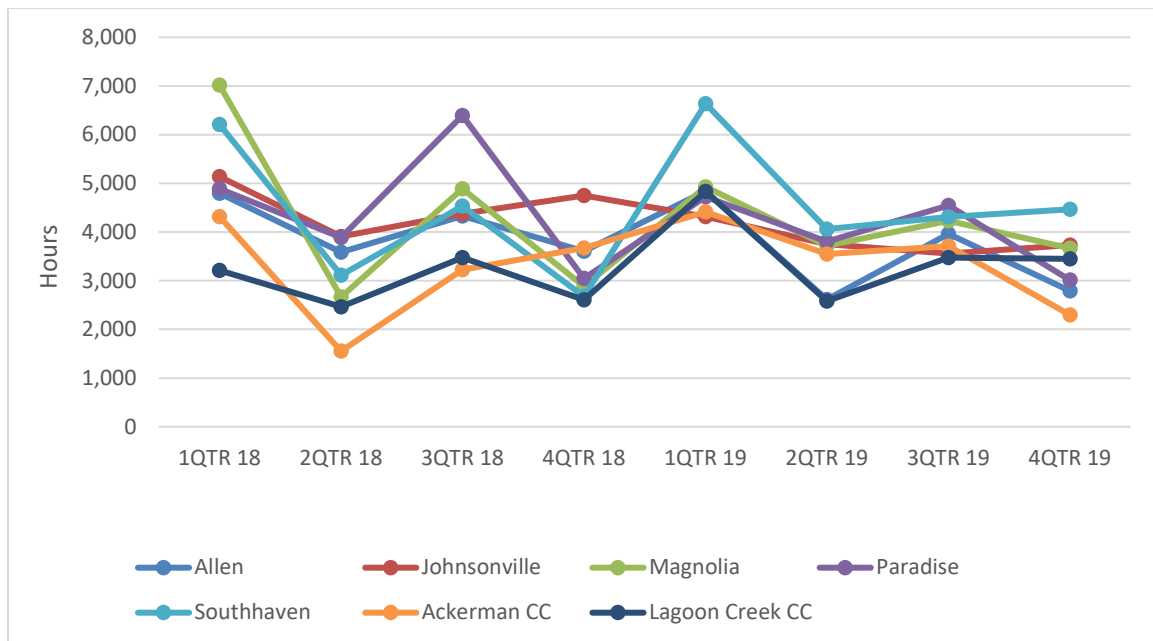


Figure 2

Built-in overtime accounted for about 16 percent (51,647 of 318,903 overtime hours) of overtime worked. Built-in overtime is included in Figures 1 through 3; however, based on our analysis we determined (1) substantial overtime over the built-in overtime was worked at some gas plants and (2) additional personnel could reduce the amounts of overtime worked.

Some Employees Worked Significant Amounts of Overtime

Based on the amounts of overtime worked during annual, semiannual, quarterly, and weekly time frames, we determined some employees at gas plants worked significant amounts of overtime. We identified 51 instances (28 and 23 instances during FYs 2018 and 2019, respectively) where employees worked over 1,000 hours of overtime during a single year. In addition, in FY 2019, 2 employees had nearly 2,000 hours of overtime, which equates to about 40 hours of overtime per week. Furthermore, our review of overtime data found the 20 employees who worked the most overtime over the last 2 FYs worked an average of 2,345 hours of overtime and earned about \$189,280 in overtime pay for the 2 years as shown in Figure 3 on the following page.

Overtime Hours Worked and Overtime Earnings for FYs 2018 and 2019

Employee #	2018 Hours	2019 Hours	2-Year Overtime Hours	2-Year Overtime Earnings
1	1,266	1,814	3,080	\$232,625
2	1,350	1,427	2,777	\$239,790
3	1,274	1,324	2,598	\$210,850
4	1,251	1,305	2,556	\$217,788
5	569	1,958	2,527	\$185,579
6	1,374	1,033	2,407	\$208,078
7	1,220	1,168	2,388	\$187,141
8	1,270	1,113	2,383	\$205,077
9	1,115	1,215	2,330	\$201,993
10	992	1,296	2,288	\$187,843
11	1,177	1,065	2,242	\$191,505
12	1,181	1,039	2,220	\$175,573
13	930	1,264	2,194	\$168,389
14	1,050	1,140	2,190	\$170,871
15	1,023	1,132	2,155	\$168,404
16	745	1,394	2,139	\$168,063
17	1,172	965	2,137	\$167,644
18	1,077	1,043	2,120	\$170,880
19	1,190	926	2,116	\$165,872
20	746	1,316	2,062	\$161,630
2-Year Average Hours and Earnings			2,345	\$189,280

Figure 3

We also determined some employees worked significant amounts of overtime on a semiannual and quarterly basis. For example, there were 14 instances where employees worked 700 hours or more of overtime during a semiannual period, which equates to about 27 hours of overtime per week. Additionally, there were 32 instances where employees worked over 400 hours of overtime during a quarterly period, which equates to about 31 hours of overtime per week.

In addition, TVA-SPP-18.018, *Fatigue Management*, initially required, among other things, fatigue evaluations to be performed when an employee worked more than 72 hours in any given week. We performed an analysis to determine the number of instances in which an employee worked more than 32 hours of overtime per week. Based on our analysis of biweekly pay period data, we determined during FYs 2018 and 2019, there were at least 973 instances when an employee worked over 32 hours⁸ of overtime in a week.

⁸ According to TVA-SPP-13.029, *Pay*, paid absences, such as leave and annual leave, are counted the same as work time in determining eligibility for overtime pay.

Potential Causes for the Significant Overtime

The potential causes for the significant overtime included (1) inadequate staffing levels, (2) forced outages and equipment reliability, and (3) the lack of a policy limiting overtime.

Inadequate Staffing Levels

According to interviews with employees and supervisors, current staffing levels and the lack of fully qualified personnel are the cause of some overtime being worked. According to OSHA, work assignments should be planned and managed in a manner that reduces overtime. However, TVA's current staffing levels at some gas plants do not make this possible. Interviews with employees and supervisors indicated some understaffing was due to vacancies or newly hired personnel in trainee status.⁹ During our interviews, some employees and supervisors indicated they did not believe there were enough fully qualified plant personnel to accomplish their mission safely. Specifically, 25 of 70 (35 percent) gas plant personnel interviewed expressed concerns regarding current or future safe operation of gas plants due to understaffing.

According to Power Operations (PO) management, TVA made a business decision to staff gas plants with a lower number of personnel than that of peer utility companies. However, Gas Operations management stated a business case analysis has not been performed to determine if hiring additional employees would be less costly than overtime being worked.

Forced Outages and Equipment Reliability

According to Gas Operations senior management, another reason for the amounts of overtime was related to forced outages and equipment reliability. In FYs 2018 and 2019, there were 635 forced outage events at gas plants. PO has initiated a performance improvement initiative to, among other things, improve its asset and asset maintenance strategy. According to TVA management, improving the availability and reliability of equipment should reduce outages, thus reducing the need for some overtime.

Lack of Policy Limiting Overtime

Another potential reason for the amount of overtime hours being worked by some employees is TVA does not currently have a policy that limits the amount of overtime nonnuclear employees can work in any given period. While OSHA currently has no standard to regulate extended and unusual shifts in the workplace, we identified federal agency recommendations, which indicate (1) the amount of overtime should be limited in varying periods (e.g., daily, weekly, monthly, annually); and (2) policies should be established to reinforce these limitations. Furthermore, several industries, including some federal agencies, have established work-hour limitations.

⁹ Employees stated it takes about 2.5 years for a new hire to become fully qualified.

TVA MAY NOT BE ACCURATELY CAPTURING THE EFFECTS OF FATIGUE

Some employees and supervisors indicated reduced staffing levels are a potential safety concern. Additionally, many of the best practices we identified highlight the increased safety risks associated with fatigue and the prolonged use of overtime. Specifically, OSHA's guidance, "Extended Unusual Work Shifts," states extended or unusual work shifts reduces productivity and increases risk of operator error, injuries, and/or accidents.

In response to our Audit 2014-15024, *TVA Employee Overtime*, issued on September 9, 2015, TVA implemented TVA-SPP-18.018, *Fatigue Management*, (for nonnuclear employees) in September 2017. As stated previously, the purpose of the SPP was to provide reasonable assurance that the effects of fatigue and degraded alertness did not impact employees' ability to safely and competently perform duties. However, we determined TVA may not be accurately capturing the effects of fatigue because (1) fatigue assessments are no longer required when significant overtime is worked, and (2) fatigue data is not trended with health and safety data in Medgate.¹⁰

Fatigue Evaluations Are No Longer Required When Significant Overtime Is Worked

TVA-SPP-18.018, *Fatigue Management*, initially required fatigue evaluations to be performed for three possible conditions: (1) when an employee worked more than 72 hours in any given week, (2) when an observed condition of impaired alertness created a reasonable suspicion that an employee was inhibited by fatigue, or (3) "self-declaration" of fatigue by the employee. However, the SPP was revised in 2018 and the 72-hour threshold trigger was removed and replaced with a "follow-up" to determine if the employee was permitted to resume working following a break of less than 10 hours after (1) an observed condition of impaired alertness or (2) a self-declaration of fatigue.

As previously stated, based on our analysis of biweekly pay period data, we determined during FYs 2018 and 2019, there were at least 973 instances when an employee worked over 32 hours of overtime in a week. However, according to TVA Safety and Enterprise Improvement, there were no fatigue assessments performed since the 72-hour threshold was removed. With the removal of the 72-hour threshold trigger to perform fatigue evaluations, the method of identifying fatigue issues depends on self-declarations of fatigue or someone reporting a suspicion of fatigue. However, only 39 of the 57 employees we interviewed stated they would self-report fatigue if warranted.

¹⁰ Medgate is the TVA medical and safety software utilized to track safety incidents and medical case management.

Fatigue Data Is Not Trended With Health and Safety Data

TVA-SPP-18.018, *Fatigue Management*, indicates (1) contributing factors to events such as fatigue evaluations and hours worked may be reviewed, and (2) the data is trended with other health and safety data in Medgate. However, the TVA safety personnel we interviewed stated fatigue data is not being collected. As a result, we were unable to determine if fatigue was, or was not, a causal factor in any of the 14 FY 2018 and 2019 safety related incidents we reviewed.

As previously stated, the procedure's current purpose is to ". . . establish controls to provide reasonable assurance that the effects of fatigue and degraded alertness do not impact an individual's ability to safely and competently perform their duties." Capturing the effects of fatigue in real time (through fatigue evaluations performed when an employee works a substantial amount of overtime) as well as identifying projected future risks through trending of fatigue data support achievement of this goal. However, the elimination of the 72-hour threshold condition and not performing trending not only removes the advanced warning that an employee has worked substantial overtime, but also increases the risk that negative trends are not identified and remedied before safety incidents occur.

RECOMMENDATIONS

We recommend the Vice President, PO, Gas and Hydro:

- Conduct a business case analysis to determine if hiring additional employees would be less costly than paying overtime.
- Consider implementing a policy limiting the amount of overtime employees can work in various periods (e.g., daily, weekly, biweekly).
- Continue to execute the PO Performance Improvement Strategy to enhance operability at the gas plants.

We recommend the Director, Safety and Enterprise Improvement:

- Consider reinstating a fatigue assessment trigger based on hours worked in a week.
- Reinforce the importance of capturing and trending fatigue data as required.

TVA Management's Comments – TVA management agreed with our recommendations; however, management stated overtime policies are dictated by the General Agreement. According to TVA management, every possible effort will be made to avoid overtime and to conform to bulletined hours of work. However, when overtime is necessary, management shall distribute such overtime among the qualified employees in accordance with the negotiated overtime procedures. Any change to the overtime procedure, including a cap on hours worked, would require TVA and union renegotiation of the existing contract. See the Appendix for TVA management's complete response.

Auditor's Response – While we agree the efforts to adjust the overtime policies that are dictated by the General Agreement could be difficult, TVA management must take great care to ensure personnel safety is not compromised due to fatigue caused by excessive overtime.

September 22, 2020

David P. Wheeler, WT 2C-K

**REQUEST FOR COMMENTS – DRAFT EVALUATION 2019-15685 – GAS PLANT
OVERTIME**

This is in response to your memorandum dated August 18, 2020. After review of the draft audit, please see the following response for gas plant overtime.

We would like to thank Sam Ruble for his diligence and support to optimize the Gas Operations workforce by identifying opportunities to reduce overtime.

Recommendations

We recommend the Vice President (VP), Power Operations, Gas and Hydro:

1. Conduct a business case analysis to determine if hiring additional employees would be less costly than paying overtime.

Response

Gas Operations agrees with this recommendation.

2. Consider implementing a policy limiting the amount of overtime employees can work in various periods (e.g., daily, weekly, biweekly).

Response

Gas Operations agrees with this recommendation, however overtime policies are dictated by the General Agreement B-V.E. Use of Overtime. Every possible effort will be made to avoid overtime and to conform to bulletined hours of work. However, when overtime is necessary, management shall distribute such overtime among the qualified employees in accordance with the negotiated overtime procedures. Any change to the overtime procedure, including a cap on hours worked, would require TVA and union re-negotiation of our existing contract.

3. Continue to execute the PO Performance Improvement Strategy to enhance operability at the gas plants.

Response

Gas Operations agrees with this recommendation.

David P. Wheeler
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September 22, 2020

We recommend the Director, Safety and Enterprise Improvement:

1. Consider reinstating a fatigue assessment trigger based on hours worked in a week.

Response

Safety agrees with this recommendation.

2. Reinforce the importance of capturing and trending fatigue data as required.

Response

Safety agrees with this recommendation.

Thank you for allowing us to provide these comments. Please contact us if you have any questions.



Allen A. Clare
Vice President
Power Operations, Gas and Hydro



Preston P. Pratt
Director
Safety & Enterprise Improvement

AAC:PPP:EGV

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