



Memorandum from the Office of the Inspector General

January 15, 2025

David L. Bowling, Jr.
Matthew R. Lovitt

REQUEST FOR FINAL ACTION – EVALUATION 2024-17511 – 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 John Anthony H. Jacosalem, Auditor, at (423) 785-4821 or Lindsay J. Denny, Director, Evaluations – Operations, at (865) 633-7349. We appreciate the courtesy and cooperation received from your staff during the evaluation.

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

JAJ:KDS

Attachment

cc (Attachment):

TVA Board of Directors
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Allen A. Clare
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OIG File No. 2024-17511



Office of the Inspector General

Evaluation Report

To the Vice President, Gas, Hydro,
and Integration, Power Operations;
and to the Director, Safety

GAS PLANT OVERTIME

Evaluation Team

John Anthony H. Jacosalem
Randall C. Clapp

Evaluation 2024-17511
January 15, 2025

ABBREVIATIONS

CC	Combined Cycle
FTE	Full-Time Equivalent
OIG	Office of the Inspector General
OSHA	Occupational Safety and Health Administration
SPP	Standard Programs and Processes
TSP	TVA Safety Procedure
TVA	Tennessee Valley Authority

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Evaluation 2024-17511 – 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 18 sites.ⁱ During 2020, we performed an evaluationⁱⁱ of overtime worked at TVA gas plants and found a significant amount of overtime was being worked by employees at some plants. In response to that evaluation, TVA hired additional full-time employees at some gas plants. However, overtime worked at gas plants has continued to increase since our previous evaluation. Specifically, between June 1, 2022, and May 31, 2024, employees at TVA's gas plants were paid a total of \$119.75 million. Of this \$119.75 million, \$33.6 million (28 percent) was paid for 369,218 hours of overtime to 360 employees.

To help manage the effects of fatigue, TVA Safety Procedure 18.018, *Fatigue Management*, establishes “. . . a process 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 number of overtime hours worked at some gas plants and the potential impact on fatigue management, we performed 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 73 percent (269,586 hours) of the 369,218 hours of overtime was performed at 7 of 18 plants between June 1, 2022, and May 31, 2024. The overtime worked was the equivalent of 61 full-time employees. We also determined some employees worked significant amounts of overtime. There were 109 instances where employees worked over 1,000 hours of overtime in a single year, including three with over 1,800 hours. Additionally, we determined that TVA may not be accurately capturing the effects of fatigue because (1) fatigue evaluations are not being performed and (2) fatigue data is not being trended as required by the *Fatigue Management* procedure.

What the OIG Recommends

We recommend TVA evaluate (1) if additional employees should be hired at TVA's gas plants and (2) the effectiveness of fatigue procedures.

ⁱ In 2023, TVA made a decision to retire its Cumberland Fossil Plant and build a 1,450-megawatt combined-cycle natural gas facility by 2026. Although the gas plant is not yet operational it was included in our scope because some employees are working overtime at the site.

ⁱⁱ OIG Evaluation 2019-15685, *Gas Plant Overtime*, September 24, 2020.



Evaluation 2024-17511 – Gas Plant Overtime

EXECUTIVE SUMMARY

TVA Management's Comments

In response to our draft report, TVA management (1) agreed with the recommendation to evaluate if additional employees should be hired at TVA's gas plants and (2) provided their planned action to evaluate fatigue procedures for enhancements and to ensure they can comply with the requirements. See Appendix B for TVA management's complete response.

Auditor's Response

We agree with TVA management's planned actions to address our recommendations.

BACKGROUND

The Tennessee Valley Authority (TVA) currently operates 101 natural gas- and fuel oil-fired generators at 18 sites.¹ 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. Between June 1, 2022, and May 31, 2024, employees at TVA’s gas plants were paid a total of \$119.75 million. Of this \$119.75 million, \$33.6 million (28 percent) was paid for 369,218 hours of overtime to 360 employees.

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.² 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.

To help manage the effects of fatigue, TVA Safety Procedure (TSP) 18.018, *Fatigue Management*, establishes “. . . a process 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, as well as other organizations, highlight the 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.

During 2020, we performed an evaluation³ of overtime worked at TVA gas plants and found a significant amount of overtime was being worked by employees at some gas plants. In response to that evaluation, TVA hired additional full-time employees at some gas plants. However, overtime worked at gas plants has continued to increase since our previous evaluation. Appendix A outlines the overtime hours worked at gas plants during the previous evaluation compared to

¹ In 2023, TVA made a decision to retire its Cumberland Fossil Plant and build a 1,450-megawatt combined-cycle natural gas facility by 2026. Although the gas plant is not yet operational it was included in our scope because some employees are working overtime at the site.

² 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.

³ OIG Evaluation 2019-15685, *Gas Plant Overtime*, September 24, 2020.

the current evaluation. Due to the high number of overtime hours worked at some of TVA's gas plants, we performed an evaluation to assess TVA's management 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 worked at gas plants by TVA employees between June 1, 2022, and May 31, 2024. To achieve our objective, we:

- Interviewed TVA personnel and reviewed relevant documentation, regulations, and TVA procedures to gain an understanding of overtime requirements at gas plants.
- Assessed TVA overtime data for gas plants to identify (1) plants with significant overtime and (2) individuals who worked significant overtime.
- Assessed data, reviewed documentation, and conducted interviews to identify causes for significant amounts of overtime worked.
- Judgmentally selected⁴ three gas plants, Ackerman Combined Cycle (CC), Lagoon Creek CC, and Johnsonville Combustion Turbine and performed site visits to discuss overtime with plant management to gain a better understanding of overtime management practices.
- Identified 26 gas plant personnel involved in safety related incidents and performed analysis of total overtime worked and overtime hours worked prior to the incident, to determine if any correlation existed between the incidents and overtime.

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

⁴ Our judgmental selection was based on (1) selecting at least one CC and one combustion turbine gas plant, (2) the total overtime hours worked at each plant, and (3) instances where at least 16 consecutive hours were worked within a 24-hour period.

FINDINGS

We determined significant amounts of overtime were worked at some gas plants. Specifically, we determined 73 percent (269,586 hours) of the 369,218 hours of overtime was performed at 7 of the 18 plants between June 1, 2022, and May 31, 2024. The overtime worked was the equivalent of 61 full-time employees. We also determined some employees worked significant amounts of overtime. There were 109 instances where employees worked over 1,000 hours of overtime in a single year and three of these employees had over 1,800 hours of overtime. Additionally, we determined that TVA may not be accurately capturing the effects of fatigue because (1) fatigue evaluations are not being performed and (2) fatigue data is not being trended as required by the *Fatigue Management* procedure.

SIGNIFICANT AMOUNTS OF OVERTIME WERE WORKED AT SOME GAS PLANTS

We determined significant amounts of overtime were worked at some gas plants. Specifically, we determined (1) overtime hours worked at 7 of the 18 plants was equivalent to 61 full-time employees, and (2) some individual employees worked significant amounts of overtime based on the overtime hours worked on an annual, quarterly, bi-weekly, and daily basis. Potential causes for the significant overtime include (1) turnover of gas operations personnel, (2) inadequate staffing levels, and (3) forced outages.

Overtime Worked at Some Plants Was Equivalent to 61 Full-Time Employees

Between June 1, 2022, and May 31, 2024, 369,218 hours of overtime were worked at TVA's gas plants. Seventy-three percent (269,586) of the 369,218 hours of overtime was performed at 7 of the 18 gas plants. This was the equivalent of 61 full-time employees. Table 1 below shows the number of overtime hours for the 7 plants and the annual full-time equivalents (FTE).

Overtime Hours and Potential FTEs			
Gas Plant	2 Year Total Overtime Hours	Employees On-Site (as of 5/31/2024)	Potential FTEs That Could be Hired
Paradise CC	47,106	30	11
Ackerman CC	45,043	27	10
Lagoon Creek CC	39,476	26	9
Southaven CC	36,850	27	8
Caledonia CC	36,406	29	8
Magnolia CC	34,147	25	8
Allen CC	<u>30,558</u>	<u>29</u>	<u>7</u>
Total	269,586	193	61

Table 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. While there were spikes during various quarters, Chart 1

below shows there was a consistent, high level of overtime worked each quarter, which could indicate additional staffing is needed.

Overtime Hours by Quarter

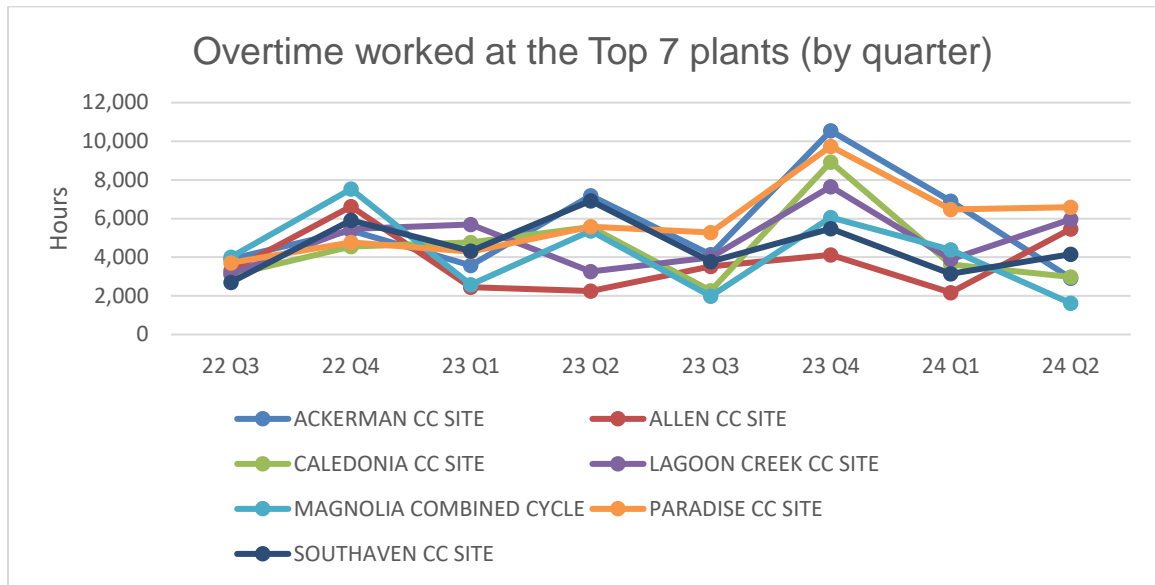


Chart 1

Built-in overtime accounted for about fourteen percent (51,352 of 369,218 overtime hours) of overtime worked across all gas sites. Built-in overtime is included in Chart 1 as well as Tables 1 and 2; 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 annually, we determined some employees at gas plants worked significant amounts of overtime. We identified 109 instances (45 and 64 instances between June 2022 and May 2023 and June 2023 and May 2024, respectively) where employees worked over 1,000 hours of overtime during a single year. In addition, three employees had over 1,800 hours of overtime in a single year. Furthermore, our review of overtime data found that the 20 employees who worked the most overtime worked an average of 2,672 hours of overtime and earned about \$259,917 in overtime pay for the two-year period, as shown in Table 2 on the following page.

Overtime Hours Worked and Overtime Earnings				
Employee #	2022-2023 Hours	2023-2024 Hours	2-Year Overtime Hours	2-Year Overtime Earnings
1	1,485	1,914	3,399	\$316,305
2	1,548	1,817	3,365	\$325,670
3	1,375	1,814	3,189	\$298,880
4	1,583	1,499	3,082	\$310,260
5	1,414	1,476	2,890	\$290,195
6	1,190	1,550	2,740	\$266,615
7	1,243	1,425	2,668	\$248,413
8	1,175	1,480	2,655	\$262,145
9	1,255	1,397	2,652	\$258,213
10	1,109	1,488	2,597	\$251,099
11	1,084	1,432	2,516	\$256,721
12	1,016	1,488	2,504	\$247,635
13	1,352	1,149	2,501	\$253,723
14	1,227	1,242	2,469	\$232,022
15	1,001	1,435	2,436	\$232,534
16	1,405	1,014	2,419	\$223,687
17	1,356	1,044	2,400	\$245,570
18	1,046	1,279	2,325	\$240,242
19	889	1,435	2,324	\$215,323
20	1,145	1,157	<u>2,302</u>	<u>\$223,091</u>
2 Year Average			2,672	\$259,917

Table 2

We also determined some employees worked significant amounts of overtime during a quarterly period, two week pay period, or 24-hour period. For example, there were 43 instances where employees worked over 400 hours of overtime during a quarterly period, which equates to approximately 31 hours of overtime per week. There were also 44 instances where employees worked 100 hours or more of overtime in a single pay period, which equates to about 50 hours of overtime per week. Lastly, we found 321 instances in which employees worked over 16 hours within a 24-hour period. According to TVA's Trades and Labor General Agreement,⁵ it is best practice to limit the instances where employees work over 16 hours within a 24-hour period.

Potential Causes for the Significant Overtime

The potential causes for the significant overtime include (1) turnover of gas operations personnel, (2) inadequate staffing levels, and (3) forced outages.

⁵ TVA's Trade and Labor General Agreement between TVA and the Trades and Labor Council for Annual Employees of TVA includes procedures for managing overtime.

Turnover of Gas Operations Personnel

According to interviews with management at gas plants, some gas plants are experiencing a high rate of personnel turnover. They stated that personnel from retiring coal plants are often used to fill positions at TVA gas plants across the Tennessee Valley. These personnel are included in the gas plants' current headcount; however, they are required to undergo training for at least two years to be properly qualified. At the end of training, these employees often leave to go to a different gas plant in order to (1) obtain a more preferable schedule or (2) move closer to their original location. Gas plant management indicated that this has been an ongoing issue within Gas Operations and seems to be escalating, especially for the southern/western region gas plants, as more coal plants are retired and new gas plants are opened.

Inadequate Staffing Levels

In response to our previous OIG evaluation, TVA increased staffing at some gas plants. Specifically, the total employee headcount at the top seven gas plants with the most overtime increased from 170 in 2019 to 193 currently. However, overtime worked at gas plants has continued to increase. Most management interviewed at gas plants indicated that they did not have adequate staffing to operate the plant without incurring significant amounts of overtime. According to OSHA, work assignments should be planned and managed in a manner that reduces overtime, which current staffing does not allow.

Forced Outages

According to management at gas plants, forced outages contributed to overtime worked by personnel. There were 616 forced outage events at gas plants during the scope of our evaluation, which is a decrease of 19 (3 percent) from the number of outage events during our previous evaluation.

TVA MAY NOT BE ACCURATELY CAPTURING THE EFFECTS OF FATIGUE

TVA-TSP-18.018, *Fatigue Management*, states that its purpose is to establish a process 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. However, we determined that TVA may not be accurately capturing the effects of fatigue because (1) fatigue evaluations are not being performed and (2) fatigue data is not being trended with health and safety data.

Fatigue Evaluations Are Not Being Performed

TVA-TSP-18.018, *Fatigue Management*, requires performance of fatigue evaluations under three different conditions: (1) when an observed condition of impaired alertness creates a reasonable suspicion that an individual is not fit to safely and competently perform their duties, (2) "self-declaration" of fatigue by the employee, and (3) a follow-up of either the preceding conditions described, after a break of less than 10 hours. According to TVA Safety, no fatigue evaluations were performed during the scope of our evaluation. A previous version of the *Fatigue Management* procedure required fatigue evaluations be

performed when an employee worked more than 72 hours in any given week; however, this requirement was removed. We performed 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 that there were at least 1,637⁶ instances when an employee worked over 32 hours⁷ of overtime in a week.

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. During this evaluation, some plant management indicated that (1) the current fatigue evaluation does not provide any value and they do not use it because it is optional, and (2) the *Fatigue Management* procedure could be improved by providing better guidance and requirements.

During the scope of our evaluation, TVA initially used Medgate for tracking medical and safety data. According to TVA Safety, fatigue evaluations could be submitted by employees within Medgate. TVA later transitioned from Medgate to Cority; however, we found that TVA Safety did not implement a way to submit fatigue evaluations in Cority. During our evaluation, TVA Safety corrected the issue by implementing a fatigue evaluation questionnaire in the system.

Fatigue Data is Not Being Trended

As previously stated, the purpose of the *Fatigue Management* procedure is to establish a process 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, TVA-SPP-18.001, *Safety Program*, states that TVA Corporate Safety will monitor metrics, which include safe work performance gaps and trends, injury precursors and severity rates, and risk analysis. The procedure states that results of trending are used to develop corrective action plans where necessary. TVA-TSP-18.018, *Fatigue Management*, states that TVA maintains an Overtime Dashboard for hours worked acutely during short periods of time as well as chronically over long-term durations. However, TVA Safety personnel indicated that (1) fatigue data is not being collected and trended, and (2) the Overtime Dashboard is not being used. Properly capturing the effects of fatigue in real time as safety incidents occur as well as identifying projected future risks through trending of fatigue data supports achievement of these goals.

Additionally, we performed analysis of safety incident data, which indicated a potential correlation between safety incidents and overtime hours worked. Specifically, we identified 13⁸ safety incidents that occurred involving employees that worked overtime at gas plants. We found most (10) of these 13 safety

⁶ TVA overtime data was provided for biweekly periods. We counted instances if total overtime for the pay period was 64 hours or more.

⁷ 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.

⁸ There were 26 total incidents. We excluded 13 that were classified as hearing loss.

incidents occurred to employees that worked significant overtime. For these 10 safety incidents, the employees worked an average of (1) 68 hours of overtime in the preceding two pay periods or (2) almost 1,400 hours of overtime in the two-year period. For these safety incidents, Table 3 below shows how many overtime hours each employee worked (1) during the two-year period and (2) the preceding two pay periods prior to the safety incident.

Overtime Hours Worked		
Incident #	Overtime Hours for Two-Year Period	Overtime Hours for Prior Two Pay Periods
1	2,597	10
2	1,660	59
3	1,170	103
4	1,669	64
5	824	56
6	1,267	31
7	1,264	112
8	477	51.5
9	2,198	110
10	697.5	79
Average	1,382	68

Table 3

While we were unable to determine if fatigue was, or was not, a causal factor for any of the safety incidents due to fatigue evaluations not being performed, the significant overtime hours worked indicate that fatigue could have been a contributing factor in the safety incidents.

RECOMMENDATIONS

We recommend the Vice President, Power Operations, Gas, Hydro, and Integration:

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

TVA Management's Comments – TVA management agreed with the recommendation. See Appendix B for TVA management's complete response.

We recommend the Director, Safety:

- Evaluate TVA-TSP-18.018, *Fatigue Management*, and TVA-SPP-18.001, *Safety Program*, to determine if fatigue is being effectively identified and mitigated at gas plants.

TVA Management's Comments – Safety will coordinate an effort to evaluate TVA-TSP-18.018, *Fatigue Management*, and TVA-SPP-18.001, *Safety Program*, for any enhancements and to ensure they can comply with the

procedure requirements. See Appendix B for TVA management's complete response.

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

COMPARISON OF OVERTIME HOURS WORKED BETWEEN PREVIOUS AND CURRENT OIG EVALUATION

The Office of the Inspector General (OIG) previously performed an evaluation of overtime worked.¹ Below is a comparison of the overtime hours worked at gas plants from the previous OIG Evaluation, which covered fiscal years 2018 and 2019, compared to the current OIG Evaluation, which covers June 2022 through May 2024.

	Fiscal Years 2018-2019	June 2022 through May 2024	Increase/ (Decrease)
Total Overtime Hours Worked	318,903	369,218	16%
Total Overtime Earnings Paid	\$24.5 million	\$33.6 million	37%
Top 7 Gas Plants			
Total Overtime Hours Worked	221,517	269,586	22%
Employees On-site at End of Evaluation Scope	170	193	14%
Equivalent Potential Full-Time Employees that could be Hired to Offset Overtime Hours	51	61	20%
Top 20 Employees			
Average Overtime Hours Worked (2 years)	2,345	2,672	14%
Average Overtime Earnings (2 years)	\$189,280	\$259,917	37%
Instances where employees worked over			
400 Overtime Hours in a Quarter	32	43	34%
32 Hours of Overtime in a Week	At least 973	At least 1,637	68%
1,000 Overtime Hours in a Year	51	109	114%

¹ OIG Evaluation 2019-15685, *Gas Plant Overtime*, September 24, 2020.

January 08, 2025

David P. Wheeler, WT 2C-K

REQUEST FOR COMMENTS – DRAFT EVALUATION 2021-17511 – GAS PLANT OVERTIME

Gas Operations would like to thank Anthony H. Jacosalem and Lindsay J. Denny for their diligence and support to evaluate overtime worked at TVA gas plants.

In response to your recommendations provided in your draft report December 13, 2024, we provide the following comments and responses.

Recommendations

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

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

Response

Gas Operations agrees with the recommendation.

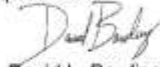
We recommend the Director, Safety:

1. Evaluate TVA-TSP-18.018, *Fatigue Management*, and TVA-SPP-18.001, *Safety Program*, to determine if fatigue is being effectively identified and mitigated at gas plants.

Response

Central Safety will coordinate an effort with the Safety Peer Team Procedure Subcommittee to evaluate TVA-TSP-18.018, *Fatigue Management*, and TVA-SPP-18.001, *Safety Program*, for any enhancements and to ensure we can comply with the procedure requirements.

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



David L. Bowling Jr.
Vice President
PO, Gas, Hydro and Integration



Matthew R. Lovitt
Director
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