



Memorandum from the Office of the Inspector General

September 21, 2016

Joseph P. Grimes, LP 3R-C

**REQUEST FOR FINAL ACTION – EVALUATION 2016-15397 – WORK ENVIRONMENT
FOR OPERATORS AT BROWNS FERRY NUCLEAR PLANT**

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.

Information contained in this report may be subject to public disclosure. Please advise us of any sensitive information in this report that you recommend be withheld.

If you have any questions or wish to discuss our findings, please contact me at (865) 633-7373 or Gregory R. Stinson, Deputy Assistant Inspector General, Evaluations, at (865) 633-7367. We appreciate the courtesy and cooperation received from your staff during the evaluation.

David P. Wheeler
Assistant Inspector General
(Audits and Evaluations)
ET 3C-K

MHP:FAJ
Attachment
cc (Attachment):

TVA Board of Directors
Michael A. Balduzzi, LP 3R-C
Kevin H. Bronson, NAB 2A-BFN
Robertson D. Dickens, WT 4D-K
William D. Johnson, WT 7B-K

Dwain K. Lanier, MR 6D-C
Justin C. Maierhofer, WT 7B-K
Richard W. Moore, ET 4C-K
Charles G. Pardee, WT 7B-K
OIG File No. 2016-15397



Office of the Inspector General

Evaluation Report

To the Executive Vice
President and Chief
Nuclear Officer,
Nuclear Power Group

WORK ENVIRONMENT FOR OPERATORS AT BROWNS FERRY NUCLEAR PLANT

Evaluation Team
Meghan H. Petty
Lucas W. Cotter

Evaluation 2016-15397
September 21, 2016

ABBREVIATIONS

BFN	Browns Ferry Nuclear Plant
CAP	Corrective Action Program
ECP	Employee Concerns Program
NRC	Nuclear Regulatory Commission
OCC	Outage Control Center
TVA	Tennessee Valley Authority
VP	Vice President

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MEMORANDUM DATED SEPTEMBER 16, 2016, FROM JOSEPH P. GRIMES,
TO DAVID P. WHEELER



Evaluation 2016-15397 – Work Environment for Operators at Browns Ferry Nuclear Plant

EXECUTIVE SUMMARY

Why the OIG Did This Evaluation

The Nuclear Regulatory Commission (NRC) expects licensees to establish a safety-conscious environment where employees are encouraged to raise concerns and where such concerns are promptly reviewed, given the proper priority based on their potential safety significance, and appropriately resolved with timely feedback to employees. In March 2016, the NRC issued a Chilled Work Environment Letter for Watts Bar Nuclear Plant. The NRC concluded a “chilled work environment”ⁱ existed in the Operations Department because of a perception that operators were not free to raise safety concerns using all available avenues without fear of retaliation. As a result of the Chilled Work Environment Letter issued to the Tennessee Valley Authority, we initiated evaluations of the work environments for operators at Sequoyah and Browns Ferry Nuclear Plants and the Nuclear Oversight group. This report summarizes our review of the work environment for operators at Browns Ferry Nuclear Plant (BFN).

What the OIG Found

In summary, we found employees interviewed within the Operations Department at BFN generally felt free to raise concerns without fear of retaliation. All but one employee reported feeling free to report nuclear safety, quality, or technical concerns without fear of retaliation. Also, most employees were comfortable reporting nuclear safety or quality concerns through multiple avenues. A few employees were aware of retaliation, mostly citing events dating back several years. However, several employees relayed a perception there could be retaliation for raising concerns. Even though the potential retaliation may not currently impact their decision to report concerns, it could in the long term.

Our interviews with Operations Department employees at BFN identified issues that could impact employees’ willingness to report concerns in the future, including: (1) inadequate resolution of concerns, (2) employees’ distrust of management, (3) the Outage Control Center (OCC)ⁱⁱ and management pressure on employees, and (4) limited awareness and understanding of the Employee Concerns Program. According to the NRC’s Policy Statement for Nuclear Employees Raising Safety Concerns Without Fear of Retaliation, “A reluctance on the part of employees to raise concerns is detrimental to nuclear safety.” Therefore, it is important

ⁱ According to the NRC Inspection Procedure 93100, “a ‘chilled work environment’ is one in which employees perceive that raising safety concerns to their employer or to the NRC is being suppressed or is discouraged and can occur because of an event, interaction, decision, or policy change.”

ⁱⁱ The OCC is staffed by site management to address issues that arise during an outage.



Evaluation 2016-15397 – Work Environment for Operators at Browns Ferry Nuclear Plant

EXECUTIVE SUMMARY

to be aware of and be proactive in addressing these issues to help ensure operators at BFN continue to be willing to report concerns.

What the OIG Recommends

We recommend the Executive Vice President and Chief Nuclear Officer:

- Identify opportunities to build trust between management and employees.
- Increase the awareness of the Employee Concerns Program's roles and responsibilities to the site.
- Communicate the expectations for management, the OCC staff, and operators on their roles, responsibilities, and acceptable behaviors with an emphasis that operators have the ultimate decision on operating the plant.

TVA Management's Comments

TVA management stated they accepted the evaluation conclusions and recommendations provided in the report and provided planned actions to address the recommendations.

BACKGROUND

Browns Ferry Nuclear Plant (BFN) is the Tennessee Valley Authority's (TVA) first and largest nuclear plant with three boiling water reactors capable of producing 3,400 megawatts, about 10 percent of TVA's total generation capacity. Located beside Wheeler Reservoir near Athens, Alabama, the plant has 1,400 full-time employees onsite and in 2014 was the second largest power producer in the United States. BFN is licensed by the Nuclear Regulatory Commission (NRC) to operate for roughly another 20 years.

The NRC expects licensees to establish a safety-conscious environment where employees are encouraged to raise concerns and where such concerns are promptly reviewed, given the proper priority based on their potential safety significance, and appropriately resolved with timely feedback to employees. According to the NRC, a safety conscious work environment is an environment in which "employees feel free to raise safety concerns, both to their management and to the NRC, without fear of retaliation." Retaliation for raising concerns is unacceptable and unlawful. Even a perception that raising concerns has resulted in retaliation can generate a chilling effect among workers that may discourage them from raising concerns.

TVA's Standard Programs and Processes 11.8.4, Expressing Concerns and Differing Views, states TVA is committed to ensuring a safety conscious work environment that encourages employees to feel free to raise concerns and/or offer opinions without fear of retaliation. The procedure sets forth the expectation that all employees have a duty to be aware of circumstances that may pose a threat to the safety and health of the public and TVA employees, to operations, or of circumstances that are unethical, illegal, or in violation of compliance standards. Employees have the right to have their concerns or points of view heard by management when they consider the issue significant and their view differs from a management decision. Differing views may be voiced to any management level at any time. It is TVA policy that every responsible view is valuable and should be heard and appropriately considered in the decision making processes.

In March 2016, the NRC issued a Chilled Work Environment Letter for Watts Bar Nuclear Plant and requested TVA develop a plan of action to address the NRC's findings. The NRC concluded a "chilled work environment"¹ existed in the Operations Department because of a perception that operators were not free to raise safety concerns using all available avenues without fear of retaliation. As a result of the Chilled Work Environment Letter issued to TVA, we initiated evaluations of the work environments for operators at Sequoyah and Browns

¹ According to the NRC Inspection Procedure 93100, "a 'chilled work environment' is one in which employees perceive that raising safety concerns to their employer or to the NRC is being suppressed or is discouraged and can occur because of an event, interaction, decision, or policy change."

Ferry Nuclear Plants and the Nuclear Oversight group. This report summarizes our review of the work environment for operators at BFN.

OBJECTIVE, SCOPE, AND METHODOLOGY

The objective of this evaluation was to determine if the work environment for operators at BFN is conducive to raising concerns without fear of retaliation. The scope of the evaluation was limited to the current perceptions of employees obtained through interviews we conducted during May and June 2016.

To achieve our objective, we (1) conducted interviews with Operations Department employees and managers using prescribed questions to determine if the work environment was conducive to raising concerns without fear of retaliation and (2) for issues identified, performed additional follow-up review of documentation to understand the issue.

In total, we interviewed 109 Operations Department employees at BFN, including 59 assistant unit operators, 22 reactor operators, 16 senior reactor operators, and 12 managers. We selected a stratified random sample of 50 percent of employees and interviewed all shift managers, the Operations Superintendent, and the Operations Director.

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

FINDINGS

In summary, we found employees interviewed within the Operations Department at BFN generally felt free to raise concerns without fear of retaliation. All but one employee reported feeling free to report nuclear safety, quality, or technical concerns without fear of retaliation. Also, most employees were comfortable reporting nuclear safety or quality concerns through multiple avenues. A few employees were aware of retaliation, mostly citing events dating back several years; however, several employees relayed a current perception there could be retaliation for raising concerns. Even though the potential retaliation may not currently impact their decision to report concerns, it could in the long term.

Our interviews with employees within the Operations Department identified issues that could impact employees' willingness to report concerns in the future, including: (1) inadequate resolution of concerns, (2) employees' distrust of management, (3) the Outage Control Center (OCC)² and management pressuring employees, and (4) limited awareness and understanding of the Employee Concerns Program (ECP).

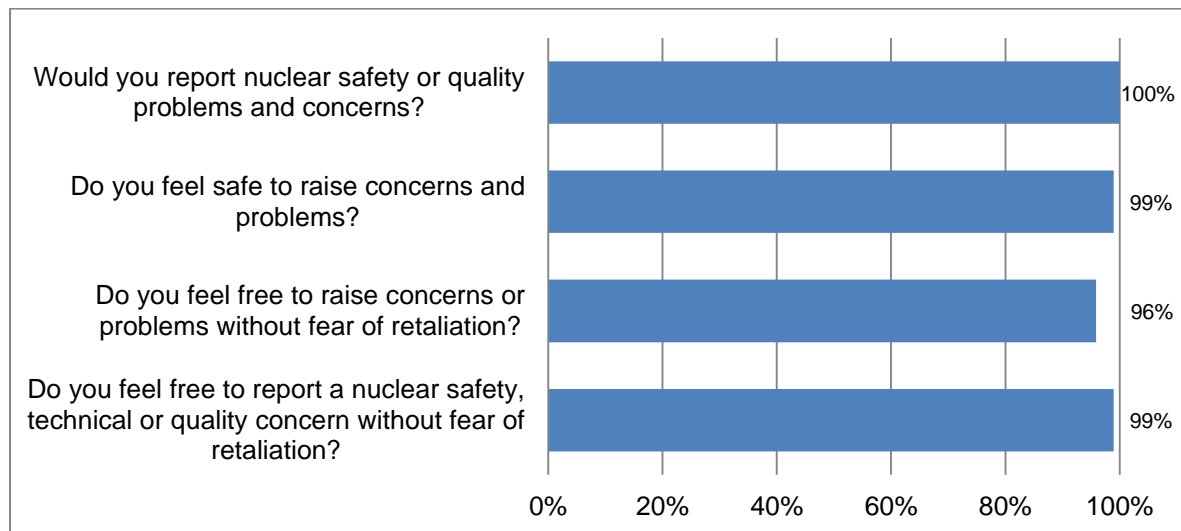
² The OCC is staffed by site management to address issues that arise during an outage.

EMPLOYEES FELT FREE TO RAISE CONCERNS WITHOUT FEAR OF RETALIATION

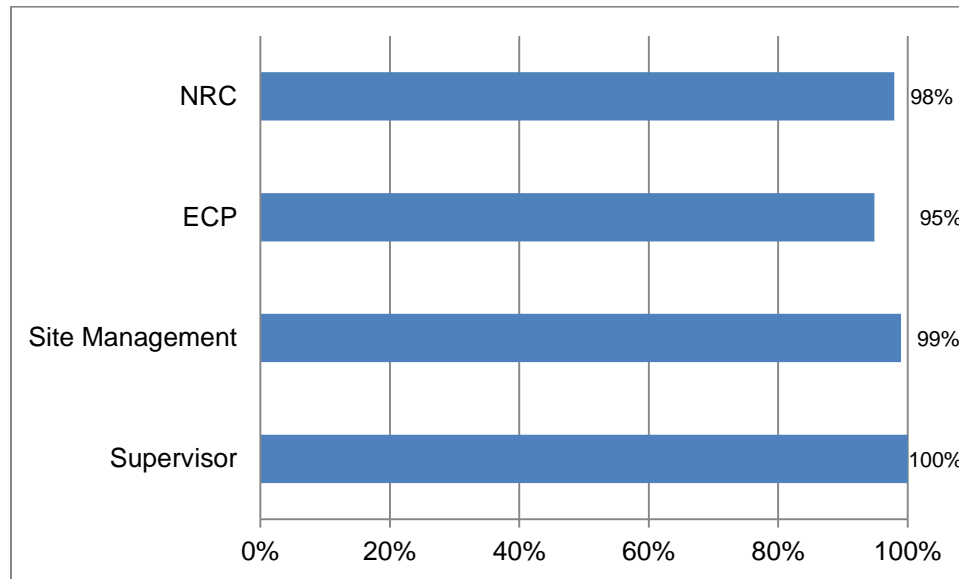
We found employees interviewed in the Operations Department generally felt free to raise concerns without fear of retaliation. All but one employee felt free to report nuclear safety, quality, or technical concerns without fear of retaliation. Every employee indicated they would report nuclear safety or quality problems and concerns. Most employees felt comfortable reporting concerns through multiple avenues.

Figure 1 below shows the percentage of employees who responded “yes” when asked if they (1) would report concerns, (2) felt safe to raise concerns or problems, (3) felt free to raise concerns or problems without fear of retaliation, and (4) felt free to report nuclear safety, technical or quality concerns without fear of retaliation.

Figure 1: Responses Related to Reporting Concerns



Employees were also asked about their willingness to report concerns using different avenues. Most employees were comfortable reporting nuclear safety or quality problems and concerns through available avenues as shown in Figure 2 on the following page. The ECP staff was the avenue that employees felt the least comfortable using to report issues. Reasons employees stated for not reporting nuclear safety problems and concerns to the ECP staff were that they would use their chain of command first and the anonymity provided by the ECP would not provide whistleblower protection.

Figure 2: Reporting Avenues

All but one employee said they felt comfortable raising an opinion that differs from management. The one individual who expressed an alternate view stated they were “mostly” comfortable with raising a differing view, but you “better make sure you’re right.”

POTENTIAL RETALIATION COULD INHIBIT WILLINGNESS TO REPORT CONCERNS

While most employees said they felt free to raise concerns or problems without fear of retaliation, several employees relayed a perception there could be retaliation for raising concerns. When we asked if employees were aware of someone who had been retaliated against, 5 operators indicated “yes” and mostly cited examples related to prior management actions dating back several years. However, a few employees relayed a current perception that raising concerns could impact future promotional opportunities or create reputational damage. Specifically, a few employees indicated senior reactor operators are more vulnerable than other operators to retaliation for raising safety concerns.

Even though the potential retaliation may not currently impact their decision to report concerns, it could in the long term. Regardless of whether the instances have actually occurred or are perceived, the potential for retaliation could inhibit employees’ willingness to report concerns.

OTHER ISSUES COULD IMPACT EMPLOYEES' WILLINGNESS TO REPORT CONCERNS

Responses in our interviews with employees in the Operations Department indicate there were other issues that could impact employees' willingness to raise concerns. These areas include: (1) inadequate resolution of concerns, (2) employees' distrust of management, (3) the OCC and management pressure on employees, and (4) limited awareness and understanding of the ECP.

Inadequate Resolution of Concerns

According to TVA's Standard Programs and Processes 11.8.4, Expressing Concerns and Differing Views, employees are encouraged to resolve issues directly with their immediate supervisors and to proceed up their management chain if necessary so corrective action may be handled promptly. The normal process for documenting and resolving nuclear safety issues is through the Corrective Action Program (CAP).³

We asked employees about the primary avenues to raise concerns and while, as noted above, employees were willing to use the avenues to raise concerns, they indicated the avenues were not always effective at resolving the concerns. According to the NRC, processes should be in place to ensure that appropriate actions are taken in response to all safety concerns raised.

- Management – There were instances where employees felt management did not adequately address a nuclear safety, personnel safety, or equipment reliability issue at the site. In total, 13 percent of employees indicated management had overridden a concern they raised, and 16 percent of employees indicated management had ignored a concern they raised. Several individuals expressed that while they may raise concerns, they did not always feel management would take their concerns seriously or act upon them.
- CAP – While approximately half of employees indicated the CAP was effective or mostly effective at resolving identified issues, 23 percent of employees indicated the CAP was not effective. The remainder of the respondents provided answers somewhere in between, did not know, or offered unclear answers. Comments revealed the CAP process was slow for equipment reliability issues, but prioritized nuclear safety and significant issues.

³ CAP is the systematic process used to find, analyze, and fix performance gaps and near misses such that overall performance is improved.

Employees cited examples of issues that were not adequately addressed through the CAP or management, including:

- Nuclear Safety Concerns – Nonfunctioning recorders related to the main steam line were ignored until a leak in April 2016 increased radiation levels, triggering alert systems and NRC notification. Also, while a weakness was identified in 2011 during an offsite power event as a result of tornadoes, we were informed actions have not been completed to provide an alternate power source for air control systems that operate emergency core cooling safety valves.
- Personnel Safety Concerns – Nonfunctioning turbine deck fans, air washes, and plant communication systems (including public address system and phones) were ignored or unresolved. In addition, concerns were raised about staff injuries and limited operational staffing in the plant resulting from fire watch duties.
- Equipment Reliability Concerns – Concerns were raised that the radioactive waste system is neglected.

Employees' Distrust Management

Generally, employees trusted their direct supervisors (95 percent). Several employees expressed distrust above their direct supervisor, with 72 percent trusting middle managers (management up to site Vice President [VP]), and 42 percent trusting upper management (site VPs and above). Of the 16 percent citing distrust of middle managers,⁴ several named one manager specifically as the source of distrust. The recent pension changes, financial constraints placed on the site (budget and staffing), and limited interaction were noted as reasons not to trust upper management.

When asked if management was fair in the actions they take to hold employees accountable, 19 percent of employees said they did not think so. In addition, 15 percent of employees did not think management was held accountable. Accordingly, employees may not feel like everyone is held to the same standard which could lead to trust issues.

The OCC and Management Pressures Employees

According to the NRC, it is essential that management at each nuclear power facility establish and maintain a professional working environment in which the licensed operator may be fully successful in discharging their safety responsibilities. Managers overwhelmingly believed employees were free to exercise conservatism and indicated they support conservative decision making at the site. However, when asked if employees felt free to exercise conservative decision making, 85 percent of employees said "always," 6 percent said "mostly," and 7 percent said "sometimes." We heard a few examples from individuals who

⁴ The remainder of the respondents provided answers somewhere in between, did not know, or offered unclear answers.

felt as though they were questioned or criticized by management for taking conservative actions.

Employees were also asked specifically if they were aware of instances where the OCC had overridden the control room, and 11 percent indicated they were aware of instances. More commonly, employees referred to the OCC bypassing the control room and directing work or failing to inform the control room of work.⁵ Some employees indicated relationship with the OCC and management had improved over the last few years, but a number of people also mentioned the OCC pushed hard and pressured employees during outages.

Limited Awareness and Understanding of the ECP

According to TVA procedure, if issues cannot be resolved in the chain of command, employees should seek alternate means of raising and resolving issues, to include the ECP. During the course of our interviews, some employees told us they had limited interaction with the ECP, and many employees did not know enough about the program to answer whether it was independent from management and protects identities (34 percent and 42 percent, respectively). Several employees stated they did not know their site ECP representative.

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In summary, employees could be less willing to report concerns in the future if they (1) feel the concerns will not be resolved; (2) do not trust management; (3) feel pressure from the OCC and management; and (4) have limited awareness or do not understand alternative avenues for raising concerns, such as the ECP. According to the NRC's Policy Statement for Nuclear Employees Raising Safety Concerns Without Fear of Retaliation, "A reluctance on the part of employees to raise concerns is detrimental to nuclear safety." Therefore, it is important to be aware of and be proactive in addressing these issues to help ensure operators at BFN continue to be willing to report concerns.

RECOMMENDATIONS

We recommend the Executive VP and Chief Nuclear Officer:

- Identify opportunities to build trust between management and employees.
- Increase the awareness of the ECP's roles and responsibilities to the site.
- Communicate the expectations for management, the OCC staff, and operators on their roles, responsibilities, and acceptable behaviors with an emphasis that operators have the ultimate decision on operating the plant.

⁵ The most cited example was a hydrostatic test performed in 2011. In addition to this example, some employees recalled other events around that time period where the OCC overrode, bypassed, or directed work without control room knowledge.

TVA Management's Comments – TVA management stated they accepted the evaluation conclusions and recommendations provided in the report and provided planned actions to address the recommendations. Some of the actions planned by management include:

- Establish expectations to use senior leadership and employee interface meetings as a forum to communicate site priorities with the number one focus of nuclear safety, and monitor the effectiveness of these meetings through the Nuclear Safety Monitoring Panel.
- Republish/discuss avenues for raising concerns using a variety of outlets including All-Hands meetings, site bulletins, and signage.
- Establish expectations during outages for OCC directors and Operations management to periodically reinforce the message regarding expectations for management, the OCC staff, and operators on their roles, responsibilities, and acceptable behaviors.

See the Appendix for TVA's complete response.

September 16, 2016

David P. Wheeler, ET 3C-K

**SEQUOYAH AND BROWNS FERRY RESPONSES TO REQUEST FOR COMMENTS ON
DRAFT EVALUATION 2016-15396 AND 15397, RESPECTIVELY – WORK ENVIRONMENT
FOR OPERATORS AT SEQUOYAH AND BROWNS FERRY NUCLEAR PLANTS**

Per your request, we have reviewed the subject draft reports and accept the evaluation conclusions and recommendations.

We find the report recommendations appropriate to promote actions that will address the concerns expressed in the conclusions of the report. The proposed actions for each recommendation for both Browns Ferry and Sequoyah are presented in the attachment with owners and due dates. These actions will be tracked as well and made available for follow-up assessment by your organization.

We place a high value on strong principles of a healthy Nuclear Safety Culture and, in particular, a Safety Conscious Work Environment. Your report findings have identified an opportunity for further improvements in Sequoyah and Browns Ferry's work environment with these principles.



Joseph P. Grimes
Executive Vice President and
Chief Nuclear Officer
LP 3R-C

JPG:LAT

Attachment

cc: M. A. Balduzzi, LP 3R-C
G. A. Boerschig, LP 3R-C
K. H. Bronson, NAB 2A-BFN
S. M. Bono, NAB 2A-BFN
D. M. Czufin, LP 3R-C
R. D. Dickens, WT 4D-K
S. M. Douglas, LP 3-R-C
R. L. Gambone, LP 3R-C
W. D. Johnson, WT-7-K
D. K. Lanier, MR 6D-C
C. G. Pardee, WT 7-K
C. Schwarz, OPS 4A-SQN
J. W. Shea, LP-3R-C
P. R. Simmons, ADM 1V-WBN
M. D. Skaggs, EQB 1B-WBN
S. A. Vance, WT-6A-K
K. T. Walsh, LP 3R-C

Attachment
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Recommendation: Identify/Utilize opportunities to build trust between management and employees			
Action Number	Action Description	Owner	Due Date
1.0	<p>Establish expectation to use Senior Leadership and employee interface meetings as a forum to communicate site priorities with the number one focus of Nuclear Safety. Ensure expectations include using these meetings to solicit feedback from employees regarding nuclear safety concerns and reinforce the avenues available to raise these concerns. Ensure an emphasis is placed on the Employee Concerns Program's roles and responsibilities to the site, and success stories of prompt resolution of previously identified Nuclear Safety concerns are shared with employees.</p> <p>Examples of Senior Leadership and employee interface meetings include:</p> <ul style="list-style-type: none"> * All Hands Meetings * First Line Supervisor and Above (biweekly) * Department Station Update (biweekly) * NAYGN * Diversity and Inclusion Council * Employee Advisory Group (EAG) * Compliments and Concerns (2Cs) 	SQN - D. Dimopoulos BFN - P. Summers	10/14/2016
2.0	<p>Revise the agenda of the Nuclear Safety Monitor Panel to ensure the panel pulses the effectiveness of the Senior Leader and Employee interface meetings, and communicate outcomes through site messaging.</p>	SQN - D. Dimopoulos BFN - P. Summers	10/28/2016
3.0	<p>Ensure plan for upcoming Senior Leadership Team Building activities such as off-site meetings includes sessions for opportunities to build trust with employees.</p>	SQN - D. Dimopoulos BFN - B. Tidwell	Complete

Attachment
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Recommendation: Increase the awareness of the Employee Concerns Program's roles and responsibilities to the site			
Action Number	Action Description	Owner	Due Date
1.0	Re-publish/discuss avenues for raising concerns.	SQN - M. Hunter BFN - B. Tidwell	10/14/2016
2.0	Establish expectations to use the All-Hands meetings and biweekly department station update meetings to place emphasis on the Employee Concerns Program and Corrective Action Program roles and responsibilities to the site as described above.	SQN - D. Dimopoulos BFN - P. Summers	10/21/2016
3.0	Brief the site communications staff on the need for site bulletins to periodically include the avenues for raising nuclear safety concerns and the role of the Employee Concerns Program and Corrective Action Program.	SQN - M. Hunter BFN - B. Tidwell	10/21/2016
4.0	Verify signage at the site in key areas such as control rooms and the OCC are visible and describe: 1. The role of the Employee Concerns Program 2. Confidentiality of the Employee Concerns Program 3. That Employee Concerns Program also addresses Nuclear Safety Concerns	SQN - M. Babb BFN - M. Richerson	10/28/2016
5.0	Schedule a self assessment that will gauge the progress made in improving the awareness of the Employee Concern Program's roles and responsibilities.	SQN - M. Babb BFN - M. Richerson	10/28/2016

Attachment
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Recommendation: Communicate the expectations for management, the OCC staff, and operators on their roles, responsibilities, and acceptable behaviors with an emphasis that operators have the ultimate decision on operating the plant.			
Action Number	Action Description	Owner	Due Date
1.0	Site VP issues written communications just prior to staffing the OCC for the Fall and Spring outages that details the expectation for management, the OCC staff, and operators on their roles, responsibilities, and acceptable behaviors with an emphasis that operators have the ultimate decision on safely operating the plant.	SQN - C. Schwarz BFN - S. Bono	4/07/2017
2.0	Establish expectation during outages for OCC directors and Operations Management periodically reinforce the message regarding expectations for management, the OCC staff, and operators on their roles, responsibilities, and acceptable behaviors with an emphasis that operators have the ultimate decision on safely operating the plant.	SQN - P. Pratt BFN - L Hughes	10/14/2016
3.0	Communicate expectations to the Senior Leadership Team for observations of OCC when staffed for outages and LCO activities to verify that communication is appropriate, meets expectations, and supports that the Shift Manager/Operations retain ultimate decisions on safely operating the plant. Consider training as a tool to reinforce these expectations.	SQN - P. Pratt BFN - L. Hughes	11/18/2016 10/07/2016
4.0	Provide a briefing to the Senior Leadership Team and First Line Supervisors that reinforces treating individuals with respect and dignity.	SQN - D. Dimopoulos BFN - P. Summers	10/28/2016