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|---|---|
| **Docket Number:** | 15-IEPR-12 |
| **Project Title:** | Nuclear Power Plants |
| **TN #:** | 204602-3 |
| **Document Title:** | Attachment 3 |
| **Description:** | N/A |
| **Filer:** | Sabrina Savala |
| **Organization:** | Pacific Gas & Electric Company |
| **Submitter Role:** | Public Agency |
| **Submission Date:** | 5/12/2015 12:37:04 PM |
| **Docketed Date:** | 5/12/2015 |

# Attachment 3

NEI 09-07, Revision 1

# Fostering a Healthy Nuclear Safety Culture

March 2014

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NEI 09-07, Revision 1

# Fostering a Healthy Nuclear Safety Culture

March 2014

# ACKNOWLEDGEMENTS

The development of Revision 1 was a team effort. A great number of individuals from across the nuclear industry – too many to name here – shared their experience with initial implementation of the nuclear safety culture monitoring process. Their insights were shared in a series of industry-INPO-NEI workshops in the first half of 2013. Following those workshops, a team of volunteers gave their time and effort to translate that experience into text and diagrams for Revision 1. Their combined efforts reflect the maturation in nuclear safety culture monitoring that has occurred since Revision 0 was issued in late 2010. The flexibility and options provided in Revision 1 are their attempt to clarify the intent of the culture monitoring process while recognizing the importance of tailoring culture monitoring to the circumstances of each site.

The following individuals were most closely involved in critical discussions leading to the production of Revision 1. For further insights on the basis for changes appearing in Revision 1, consider contacting the individuals on this team who represented your company.

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BENYAK, Darin (First Energy)
BRISSETTE, Susan (Bruce Power)
CABLE, Bill (OPPD)
COSBY, Tom (TVA)
CUSTER, Kristen (Dominion)
DAVIS, Doug (Luminant)
GASTON, Ron (Exelon)
HAYES, Lori (Duke)
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# EXECUTIVE SUMMARY

Nuclear power plants are unique, both in the application of a technology that harnesses the energy of the atom and as an organization that can manage this technology safely. Safe and reliable operation of the U.S. nuclear fleet requires the diligent focus of a team of nuclear professionals. A key element of a nuclear power plant's safe operation – its nuclear safety culture – depends on every employee, from the board of directors, to the control room operator, to the field technician in the switchyard, to the security officers and to supplemental workers on site. The Institute of Nuclear Power Operations (INPO) *Traits of a Healthy Nuclear Safety Culture*[1] defines nuclear safety culture as the core values and behaviors resulting from a collective commitment by leaders and individuals to emphasize safety over competing goals to ensure protection of people and the environment.

This document provides guidance for Fostering a Healthy Nuclear Safety Culture. It describes the industry approach to monitoring and addressing nuclear safety culture issues. It places primary responsibility on line management, and in particular, on the site leadership team.[2] The goal is to provide an ongoing holistic, objective, transparent and safety-focused process to identify early indications of potential problems linked to culture. The process uses a cross-section of available data (e.g., the corrective action program, performance trends, NRC inspections, industry evaluations, nuclear safety culture assessments, self-assessments, audits, operating experience, workforce issues and employee concerns program and other process inputs) that is tailored to the needs and experience of each site. The process provides for collaborative discussion of the data leading to insights about its meaning. These may lead directly to corrective actions. The ongoing monitoring of nuclear safety culture relies on the Common Language of Nuclear Safety Culture, as documented in INPO 12-012. (The NRC has documented the Common Language in NUREG-2165.[3])

Revision 1 of NEI 09-07 is based on industry experience with initial implementation of Revision 0 of NEI 09-07. Based on industry feedback, Revision 1 provides more flexibility and encourages tailoring the monitoring process to each site's specific circumstances. Revision 1 is intended to help users to:

(1) Gain greater value from the culture monitoring process, chiefly (a) high-value discussions about cultural implications of the input data and (b) identification of appropriate actions to take in response to those implications;

(2) Reduce the burden added by the culture monitoring process wherever practical.

For more information on NEI 09-07 or to provide feedback on this document or your site's experience with nuclear safety culture monitoring, please contact James Slider, NEI senior project manager for this document, via e-mail to jes@nei.org, or via phone number (202) 739-8015.

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[1] INPO 12-012, Rev. 1, Traits of a Healthy Nuclear Safety Culture, April 2013.

[2] Throughout the document, the term Site Leadership Team or acronym "SLT" is used. This term refers to the most senior leaders at the site, typically those who report directly to the Site Vice President or Plant Manager. Other common names for this group include senior leadership team or site management team.

[3] NUREG-2165, "Safety Culture Common Language". U.S. Nuclear Regulatory Commission, March 25, 2014, NRC ADAMS Accession Number ML14083A200.

# REVISION SUMMARY NOTES

In developing Revision 1, it was identified that the implementation of Revision 0 at the sites was, in some cases, focused on data review and trending. A common theme in Revision 1 is to focus on having a healthy, self-critical dialogue about cultural implications rather than primarily focusing on the quantity of data and trending. The contents of Revision 1 have been substantially revised from what appeared in Revision 0. To facilitate readability, Revision 1 is presented as a clean copy, rather than in line-in/line-out format.

Revision 1 features five options for the safety culture monitoring process. These are illustrative, not binding, and sites are encouraged to adapt the monitoring process to their specific circumstances.

Revision 1 moves the guidance for independent nuclear safety culture assessments (NSCA) to a separate companion document. The companion document will be published later this year. The separation of guidance documents is intended to further distinguish the ongoing process for continuous culture monitoring from the episodic process for assessing and diagnosing cultural health that is performed biennially and when needed.

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# 1 FOSTERING A HEALTHY NUCLEAR SAFETY CULTURE

Nuclear power plants are among the most technologically complex of all energy facilities. This complexity reflects the precision needed in design, maintenance and operations to harness the energy of the atom safely, reliably and economically. Nuclear energy thus requires consistent, high levels of organizational performance by the highly skilled professionals who operate and maintain nuclear power plants.

A key element for achieving consistent, high levels of performance in a nuclear organization is its safety culture. According to the Institute of Nuclear Power Operations (INPO), nuclear safety culture is defined as "the core values and behaviors resulting from a collective commitment by leaders and individuals to emphasize safety over competing goals to ensure protection of people and environment."[1] Thus, nuclear safety culture depends on every employee, from the board of directors, to the control room operator, to the field technician in the switchyard, to the security officers and to contractors on site. Nuclear safety is a collective responsibility. No one in the organization is exempt from the obligation to ensure nuclear safety first.

While the licensee maintains the responsibility for maintaining a healthy safety culture, the regulator provides an important oversight function. This is described in the Federal Register Notice dated June 14, 2011, Final Safety Culture Policy Statement:

> Nuclear Safety Culture is defined as the core values and behaviors resulting from a collective commitment by leaders and individuals to emphasize safety over competing goals to ensure protection of people and the environment. Individuals and organizations performing regulated activities bear the primary responsibility for safety and security. The performance of individuals and organizations can be monitored and trended and, therefore, may be used to determine compliance with requirements and commitments and may serve as an indicator of possible problem areas in an organization's safety culture. The NRC will not monitor or trend values. These will be the organization's responsibility as part of its safety culture program.[2] [Emphasis added]

Nuclear safety culture is for an organization what character and personality are for an individual: a feature that is made visible primarily through behaviors and espoused values. Nuclear safety culture is undergoing constant change. It represents the collective behaviors of the organization, which change as the organization and its members change and apply themselves to their daily activities. As problems arise, the organization learns from them. Successes and failures become ingrained in the organization's nuclear safety culture and form the basis on which the organization does business. These behaviors are taught to new members of the organization as the correct way to perceive, think, act and feel.

INPO states that the strength of an organization's nuclear safety culture could lie anywhere along a broad continuum, depending on the degree to which the attributes of nuclear safety culture are embraced.[1] Even though nuclear safety culture is an intangible concept that cannot be measured simply through quantitative means, it is possible to monitor[3] the health of an organization's nuclear safety culture by monitoring observable behaviors. When deviations from expected behaviors are noted, it is the obligation of the organization to promptly and thoroughly assess and correct such deviations. This monitoring and adjustment process facilitates the desired behaviors of a learning organization – one that maintains nuclear safety as its overriding priority and continuously seeks ways to improve.

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[1] "Traits of a Healthy Nuclear Safety Culture", INPO 12-012, Rev. 1, Institute of Nuclear Power Operations, Atlanta, GA, April 2013, page 6.
[2] 76 FR34777, "Final Safety Culture Policy Statement", U.S. Nuclear Regulatory Commission, June 14, 2011.
[3] Throughout this document, the term "monitor" or "monitoring" generally refers to efforts to check the health of the safety culture on a more or less continuous basis.

In-depth assessments[4] can effectively gauge the health of a plant's nuclear safety culture. INPO recommends a periodic self-assessment to determine to what degree the organization has a healthy respect for nuclear safety and to verify that nuclear safety is not compromised by production priorities.[5] These assessments, and the actions taken in response to them, provide assurance that the proper attention to nuclear safety culture is in place in daily operations and behaviors.

Nuclear safety culture evolves over time. Therefore, it is also appropriate to review any evidence of problems on a frequent, ongoing basis. Personnel and organizational changes, budget challenges, handling of emergent issues, and day-to-day organizational dynamics can have a profound impact on what is viewed as important and hence can influence the behaviors and nuclear safety culture at the plant and across the organization.

Many sources of data may indicate a potential nuclear safety culture issue. Examples of such sources include station performance indicators, NRC inspection reports, the corrective action program, the employee concerns program, audits and quality control inspections, self-assessments, benchmarking, workforce issues, and others identified elsewhere in this document. These are examples and suggestions generally applicable to nuclear organizations. The specific choice of data sources to be included in the culture monitoring process at each site is the prerogative of site leadership. Site leadership should determine which data sources are most useful for revealing insights about the health of the nuclear safety culture in their organization.

The purpose of this document is to provide a framework for the operators of nuclear power plants to monitor their nuclear safety culture on an ongoing and timely basis. The guidance provided is intended to provide a means of accomplishing nuclear safety culture monitoring. The guidance herein should not be viewed as the only way. This guideline provides a basis for developing site-specific tools that address the elements discussed in this document and that each site can use to foster continuous improvement of nuclear safety culture. The guidance also addresses how the monitoring process can be adapted for utilities operating under a fleet model to develop programmatic, company-wide nuclear safety culture insights.

[4] Throughout this document, the term "assess" or "assessment" generally refers to occasional deeper dives into the culture through structured interviews, employee surveys, and other means employed to fulfill the requirements of INPO SOER 02-04 to do so at least every two years.
[5] Significant Operating Experience Report 02-4, Rev. 1, "Reactor Pressure Vessel Head Degradation at Davis-Besse Nuclear Power Station", Institute of Nuclear Power Operations, Atlanta, Georgia, January 27, 2006, page 9.

# 2 OVERVIEW OF NUCLEAR SAFETY CULTURE MONITORING

The nuclear industry uses two mechanisms for understanding the health of site nuclear safety culture. One is a process for monitoring cultural health on an ongoing (essentially continuous) basis. This is referred to as the nuclear safety culture monitoring process. This process is described further beginning in Section 2.1 below, and in greater depth in Sections 3 and 4.

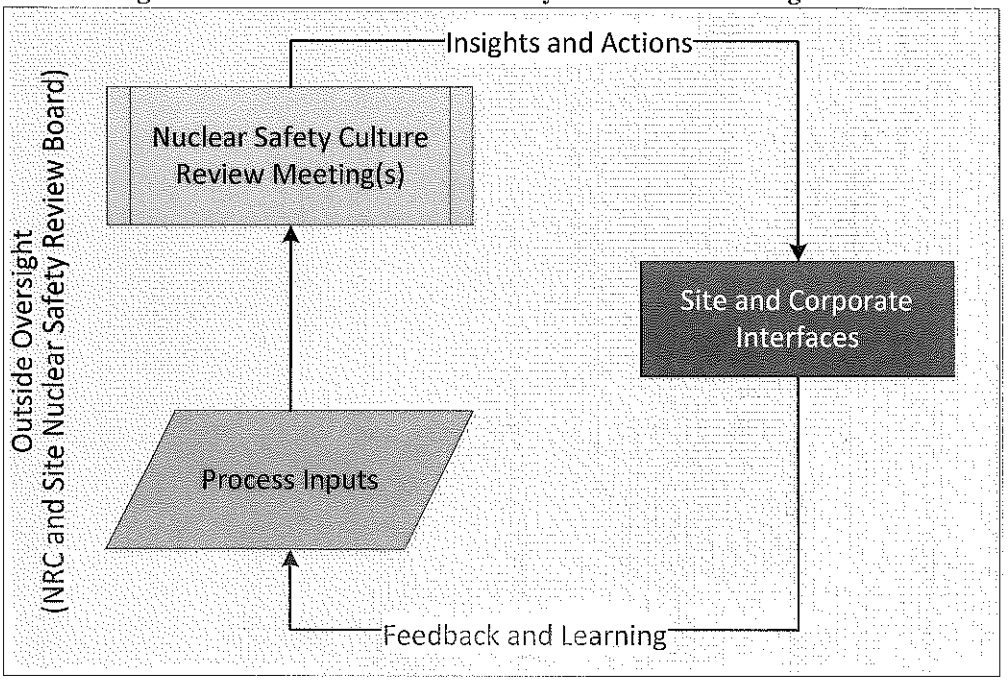
The other process is used for periodic assessments of nuclear safety culture. These assessments are required by INPO SOER 02-04 every two years and in preparation for some NRC supplemental inspections. Assessments commonly involve a combination of surveys, interviews and team observations of site evolutions and work processes. Team members are generally independent of the site organization to varying degrees, depending on the purpose of the assessment. Guidance for nuclear safety culture assessments is provided in a companion document.

The biennial nuclear safety culture assessment and ongoing monitoring of nuclear safety culture complement each other in the following way. The biennial assessment takes a detailed "snapshot" of the culture at a moment in time. This detailed, but static view establishes a baseline on the site nuclear safety culture across the organization. It may also contribute diagnostic information to illuminate why the culture is what it is. By contrast, the ongoing culture monitoring process (which utilizes whatever inputs arise naturally during the monitoring period) is more adept at detecting changes in the nuclear safety culture. The collective discussions of cultural implications held in the ongoing monitoring process help to identify the cultural changes that need to be addressed prior to the next biennial nuclear safety culture assessment.

## 2.1 PROCESS OVERVIEW

An overview of the process for continuous monitoring of nuclear safety culture is provided in Figure 1 below.

**Figure 1: Overview of Nuclear Safety Culture Monitoring Process**



### 2.1.1 Responsibility and Objective

The approach presented here for assessing and addressing nuclear safety culture issues places responsibility on line management, and in particular, on the site leadership team. The objective is a transparent and nuclear safety-focused process which can provide early indication of declining nuclear safety culture[1] and identify strengths worth replicating. The process also aids in developing corrective actions and monitoring the impact of those actions on the safety culture over time.

Because culture is a reflection of attitudes and behaviors, it is not possible to measure culture entirely objectively. Nevertheless, there are measurable aspects of plant conditions which can be trended to determine if nuclear safety cultural issues contributed to the condition. Process weaknesses, discovered through audits, self-assessments, or inspections, also can provide evidence of possible concerns with the nuclear safety culture. Similarly, the attitudes and behaviors of site personnel can be assessed through surveys, interviews and behavioral observations. It is the responsibility of the site leadership team to employ these various sources of information to monitor and manage the culture.

### 2.1.2 Critical Success Factors

There are two critical success factors for the monitoring process. First, the culture monitoring team should review inputs from a variety of data sources to enable them to discern faint signals of changes in safety culture. Second, the team should engage in a self-critical conversation, informed by their judgment and experience, leading to insights about the culture.

### 2.1.3 Nuclear Safety Culture Review Meetings

Revision 0 of this document described two bodies expected to meet to discuss cultural implications of site data. The first body was the Nuclear Safety Culture Monitoring Panel (NSCMP or "monitoring panel"). The NSCMP was envisioned as the forum for consolidating insights from the various data sources into more focused material for consideration by the second, more senior body, the Site Leadership Team (SLT). Revision 0 of this document described the functioning of the NSCMP and SLT as separate entities holding distinct, complementary meetings. Experience with implementation of Revision 0 showed that at some sites, the discussion of safety culture implications at the NSCMP meeting captured all the essential insights and further discussion at the SLT meeting yielded little or no additional value to the process. Other sites found that the SLT meeting added great value in promoting cultural learning in their organization. Revision 1 thus provides a range of options for these two bodies, including combining their functions into a single entity and meeting. Revision 1 also allows other methods to gather issues and insights for consideration by the SLT. Five illustrative process options are presented in Appendix 1.

The process options described in Appendix 1 are recommended, not prescribed, methods for assessing the culture. The intent of all the process options is to foster a meaningful conversation about safety culture, and promote broad awareness of safety culture in the site population. Sites should adopt or adapt the guidance presented here to create a culture monitoring process that works in their particular circumstances.

Feedback from initial implementation also indicated that some organizations found value in adding a fleet-level review of nuclear safety culture. This feature is not required or expected, but simply described here for the benefit of those who wish to consider adopting this practice for their fleet or alliance. This fleet-level cultural review body is referred to here at the Fleet Nuclear

[1] "Faint signals" per Ron Westrum, Emeritus Professor of Sociology, Eastern Michigan University.

Safety Culture Executive Review Team (FNSCET). A comparison of the features of the NSCMP, the SLT and the FNSCET is provided in Table 1 below.

### 2.1.4 Process Inputs

Experience with implementation of Revision 0 showed how easy it is to overwhelm the monitoring process with too much data and inefficient analyses. In Revision 1, the guidance reflects the importance of choosing input data streams richest in cultural signals and selecting efficient methods for separating "signal" from "noise" when examining those data streams. This means that each site should be free to tailor input data selection to the conditions of that site. Revision 1 makes clear that the data streams presented in NEI 09-07 are recommendations, not obligations. Each site is responsible for selecting the data streams that best help the site leadership team to recognize and respond to early indications of declining or improving nuclear safety culture.

### 2.1.5 Site and Corporate Interfaces

Cultural insights and actions from the monitoring process must be communicated and implemented. Interfaces with the site and corporate organizations provide the means to do so. Those interfaces also feed data back to the process input stream. This enables the culture monitoring process to gauge the effect of prior corrective actions and communications in moving the culture toward the desired target.

### 2.1.6 Site External Oversight

The nuclear safety culture monitoring process is subject to outside oversight from two principle sources. First is the Nuclear Regulatory Commission inspection program. Elements of the culture monitoring process and the results of the process are subject to NRC inspection through the resident inspectors' daily activities, for example, through the NRC's Problem Identification and Resolution (PI&R) inspection, and through supplemental inspections. Second is the company's Nuclear Safety Review Board (NSRB) or equivalent offsite review body. The NSRB provides an important independent perspective on the site safety culture and the culture monitoring process. As with other matters affecting health and safety at the site, the board's interest and review should challenge site leadership to maintain a questioning and self-critical attitude on nuclear safety culture. If the board detects a lack of self-critical behavior among site leadership, their scrutiny and influence are essential to ensure that the culture monitoring process remains effective.

**Table 1 - Comparison of Nuclear Safety Culture Review Bodies**

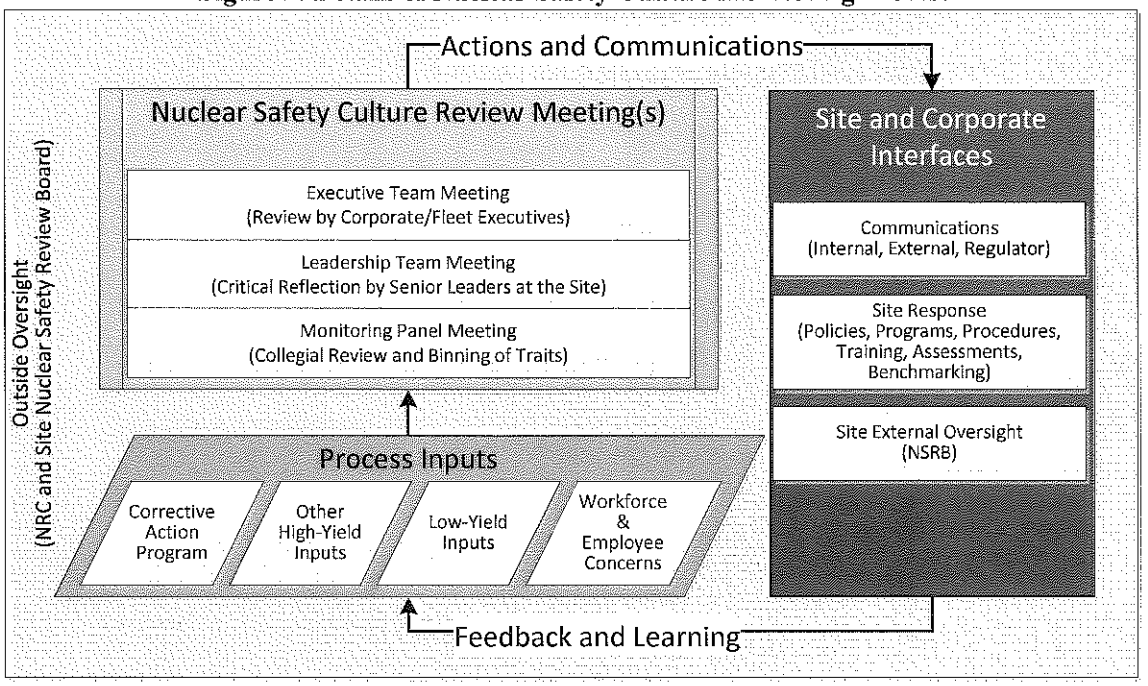
| Feature | Nuclear Safety Culture Monitoring Panel | Site Leadership Team | Fleet Nuclear Safety Culture Executive Team[2] |
|---|---|---|---|
| **Recommended Membership** | Data stream owners and site middle managers | Senior managers (Site Vice President, Plant Manager and Direct Reports) | Chief Nuclear Officer, Site Vice Presidents, Other Corporate Officers as fleet thinks appropriate |
| **Recommended Meeting Frequency** | 3-4 times per year | At least 2 times per year if SLT is separate from NSCMP.<br>Recommend 3-4 times per year if the SLT/NSCMP operate as a single body, and as warranted by site performance. | At least once per year |
| **Suggested Inputs** | Site data owners' knowledge or analysis of their process inputs; supplemented by members' observations of site activities and processes | Primary input is the report of the NSCMP (if NSCMP exists at the site). Additional input data and observations are provided by the SLT members using methods determined at the site and at the discretion of SLT members. | Reports from the SLT of each site in the fleet |
| **Process** | Binning and trending of raw data before meeting; individual review of selective inputs; collective discussion to find significance and reference to a standard cultural model such as the INPO Traits. | Individual review of the NSCMP report (if NSCMP exists at the site) or other process inputs and selective additional inputs at discretion of members; Collective discussion to find significance. | Individual review of selective inputs before meeting; Collective discussion to find significance |
| **Perspective** | Likely to be a "tactical" view of Nuclear Safety Culture, because members are so close to the raw data | Likely to be "strategic" view of Nuclear Safety Culture, linking observations across the entire site organization | Strategic view of corporate nuclear safety culture and the corporate influence on sites' nuclear safety culture |
| **Expected Output** | Written report to SLT. Content of report is at discretion of NSCMP, but should convey a summary of data reviewed, insights and any required analysis, such as proposed ratings of INPO traits, and recommended actions. | Written report of the SLT's conclusions on the health of the nuclear safety culture and actions and communications to address weaknesses and share strengths; action tracking as determined by site. | Written report of the FNSCET's conclusions and actions |

[2] Information on a fleet-wide culture review body is provided for information only. Formation and use of a fleet-wide culture review body is at the discretion of the sites, companies and alliances choosing to implement NEI 09-07.

# 3 A DEEPER LOOK AT PROCESS ELEMENTS

The process description below provides greater detail on the recommended elements of a nuclear safety culture monitoring process. Sites may adapt this guidance to suit their particular circumstances, as long as the resulting process fosters meaningful conversations and insights on safety culture implications of site data and enables timely actions to maintain a healthy safety culture. Figure 2 shows additional details on the major process elements depicted in Figure 1 above.

**Figure 2: Details of Nuclear Safety Culture Monitoring Process**




## 3.1 PROCESS INPUTS

Process inputs are selected according to the judgment of the site. The inputs shown in Figure 2 are typical. For each input, there are site data (e.g., deficiencies, violations, weaknesses, or strengths) which can be reviewed in combination with data from other inputs to determine whether there is a nuclear safety culture issue.

The INPO traits document (INPO 12-012) describes the essential attributes of a healthy nuclear safety culture. The traits provide a useful framework for assessing and categorizing the data, and in combination, to identify potential nuclear safety cultural issues for action. Using a consistent model and terminology throughout the entire process promotes clear communication of issues which the entire site can understand and respond to.

Note: In choosing process inputs, it is fundamental to remember that the objective is not merely the collection and packaging of statistics. Rather, the goal is thoughtful discussion and cognitive analysis by site leadership, which may be supported by the data retrieved.

Four broad categories of data sources are described below.

### 3.1.1 Corrective Action Process (CAP) Inputs

The CAP is the largest single source of potential input to the culture monitoring process. Because the CAP is so comprehensive and encompassing at most sites, it is incumbent on the site to select the subset of CAP evaluations that will be fed into the culture monitoring process.

Important causal investigations should be considered for inclusion in the culture monitoring process. The causes and contributors or other latent weaknesses identified should be examined for possible safety cultural implications. "Good catches", CAP trends, anonymous reports, and other CAP feedback may be considered for additional insights. Some sites also have a process for capturing issues below the threshold requiring entry into their CAP (e.g., conditions not adverse to quality). Sites with such a process should consider examining those lower-tier issues for safety culture insights.

In general, sites should give special consideration to CAP entries that appear to be emotionally charged, carry negative tones, or indicate current frustration or dissatisfaction with procedures, processes, resources, or other organizational deficiencies. Special consideration should also be given to entries expressing concerns about the ability of the management team to address repetitive or longstanding issues or expressing lack of respect or trust.

### 3.1.2 Other High-Yield Inputs

In addition to CAP data, a few other data types should be considered important for consideration of cultural implications. Examples include:

- Regulatory Communications – This category includes items which arise from communications with regulatory agencies and are not already in CAP. "Regulatory agencies" include the NRC, other federal regulators (e.g., NERC, EPA), and state and local agencies. The regulatory communications items to capture are those appearing to have safety culture implications.
- Assessments – This category includes periodic and *ad hoc* assessments directly focused on nuclear safety culture behaviors, such as nuclear safety culture assessments (NSCAs). Other assessments may also be included if they address safety culture behaviors or appear to have other safety culture implications.
- Industry Evaluations – This includes evaluations conducted by outside organizations (e.g., INPO, American Nuclear Insurers, Nuclear Electric Insurance Limited), if the evaluation results are not already included in CAP. For example, INPO evaluations are conducted approximately every other year, ideally in the alternate year from the nuclear safety culture assessment. Included in the INPO evaluation is an assessment of nuclear safety culture, resulting in a nuclear safety culture assessment of a site almost every year. These industry evaluations are available to NRC on site and should be checked for safety culture implications.

### 3.1.3 Low-Yield Inputs

Several other data types which may be less rich in signs of cultural health may be worth considering on a case-by-case basis. Each site should determine which of these are useful to culture monitoring in their organization. In addition, the site should determine how many instances of each type should be reviewed, how deeply each type or instance should be examined for cultural implications. For example, for a data type that is high in volume but relatively low in cultural content, trending may suffice. For other types, a quick scan by a qualified individual might suffice to determine whether a particular instance merits detailed consideration in the culture monitoring process. Site selections of data types and depth of examination given to each type should

be made judiciously. It is important to avoid overwhelming the safety culture monitoring process with so much volume that the cultural "nuggets" are obscured. Examples[3] of the optional low-yield data types include:

- Operating Experience – Company-internal operating experience (OE), such as that provided through ICES[4] or other reporting processes can provide relevant, site-specific insights about safety culture behaviors. Nuclear industry OE programs and processes often provide insights which highlight weaknesses in safety culture behaviors. The insights gathered from reviews of internal OE often provide additional detail and perspectives which complement information available in the CAP evaluation of those events. External OE should be evaluated to determine if the safety culture behaviors in those events are being exhibited at the site. Comparison of external OE with what the site has learned through its internal OE can help draw attention to the importance and relevance of the site's own safety culture behaviors.
- Quality Assurance Items – This category includes items identified through quality assurance audits and/or assessments that have apparent safety culture implications and are not already in CAP. Sites should consider QA items as a potential input for the safety culture monitoring process.
- Self-Assessments – This category includes items identified through performance-based self-assessments that appear to have safety culture implications and are not already in CAP. Sites should consider self-assessment items as a potential input for the safety culture monitoring process.
- Benchmarking/Observations – This category includes items from the wide variety of benchmarking activities involving other sites, companies, or industries. It also includes observations by managers and supervisors in the field that may provide insights about cultural health.
- Site Performance Trends – Each site has a broad suite of indicators to assess performance, and should identify and select for Nuclear Safety Culture monitoring their own set of specific trends. Selected indicators are more indicative of individual/organization behaviors and values which support nuclear safety. Trends can be developed from these indicators and the cause of the trend – behaviors, process, training, resources, or leadership – can be examined for corrective action. Examples include operator work-arounds, control room deficiencies, deferred preventive maintenance, timeliness and effectiveness of corrective action, system health, leadership effectiveness and site staffing, fitness for duty and access authorizations.
- Miscellaneous Sources – As a best practice, some sites also consider optional inputs from such sources as: the station oversight organization; Compliments and Concerns (2Cs) meetings; plant health reports; vendor-generated nuclear safety culture data such as surveys, audits, and assessments; human performance data such as site, department or crew "clock resets"; and training feedback.

### 3.1.4 Workforce and Employee Concern Inputs

There may be additional inputs that come directly to the attention of site senior management and are important in assessing nuclear safety culture, but, due to the sensitive, confidential nature of the information, may not appropriate to be handled through the nuclear safety culture monitoring panel. Examples include:

[3] The examples given here are meant to be illustrative and may not comprise mutually exclusive categories.
[4] INPO Consolidated Event System, the primary means for reporting, retrieving, and analyzing event-based operating experience. ICES consolidated three major industry systems and databases: Plant Events, EPIX and NPRDS.

- Allegations – These include concerns reported directly to the NRC by site employees and contractors, and NRC requests for information needed for their investigation of allegations.[5]
- Workforce Issues - These include data sources that could reflect concerns within the workforce that may be precursors to nuclear safety culture or safety conscious work environment (SCWE) issues, such as: grievance trends, potential SCWE claims, hostile work environment claims, sexual harassment or peer on peer harassment, industrial safety trends, disciplinary action review board trends, changes in compensation /incentive programs, change management issues and workforce management issues (e.g., staffing, knowledge transfer, or certification issues).
- Employee Concerns Program (ECP) - This program provides opportunities to raise issues outside the normal chain of command. ECP issues typically are not entered into the CAP, but ECP trends may be considered by the culture review meetings.

Other sensitive or confidential inputs, such as information gathered from surveys or focus group meetings, can be insightful sources of information for the culture monitoring process. Great care must be given to employees' expectations of privacy and regulations governing protection of identity. "Sanitizing" identifying information may be performed without losing the value of the contents to the culture monitoring process.

## 3.2 NUCLEAR SAFETY CULTURE REVIEW MEETING(S)

Regular meetings of the Site Leadership Team (SLT) are the cornerstone of the culture monitoring process. The meeting provides the forum at which critical, reflective conversations about nuclear safety culture take place.

Some sites conduct separate Nuclear Safety Culture Monitoring Panels (NSCMP) to provide insights and issues to the SLT, while others employ different methods to consolidate information for use by the SLT. Sites should discuss nuclear safety culture issues in a leadership forum on a quarterly basis. The quarterly forum could be directly by the SLT, for example, or by a subcommittee of the SLT, or lower level meetings such as the NSCMP or equivalent. Where processes are in place to monitor nuclear safety culture in quarterly meetings of the NSCMP or equivalent, the SLT should meet at least semi-annually to consider the health of nuclear safety culture at the site.

In addition to the SLT at each site, fleet-based organizations should consider a fleet-level meeting of appropriate corporate executives to consider the combined nuclear safety culture insights arising from SLT meetings across their fleet. A fleet-wide culture monitoring meeting can help in identifying: (a) commonalities among culture implications occurring at individual sites in the fleet, (b) effects of corporate policies and resource allocations on site cultures, and (c) insights about the health of the corporate nuclear safety culture revealed by a fleet-wide perspective on site and corporate data.

Whatever process the site employs, the NSCMP, SLT or other body providing the overall judgment about the health of the site safety culture should be guided by the INPO traits. The INPO traits comprise a useful, standard model of safety culture for all plants in the U.S. fleet. Thus, the traits provide a common framework for all sites to follow in organizing their thinking about safety culture, in discussing the implications of safety culture data, and in communicating insights and lessons about safety culture to the site population and other stakeholders.

[5] Information on NRC's allegations program is available at http://www.nrc.gov/about-nrc/regulatory/allegations-resp.html.

The main purpose, composition and considerations for the SLT, NSCMP and Executive Review Meetings are described below. Recommendations on preparations for and conduct of these meetings are provided in Table 2 below.

**Table 2 – Recommendations for Nuclear Safety Culture Review Meetings**

| Stage | Recommendations |
|---|---|
| **Preparation for Meeting** | • Read Ahead - Before the meeting, participants read and understand the input material to be discussed.<br>• Orientation - Through a pre-job brief or other means, participants are reminded of the purpose, conduct and outcome expected of the meeting. |
| **Conduct of Meeting** | • Safe Environment - The chairperson and all participants strive to maintain a safe environment for receiving, reviewing and discussing inputs (i.e., "Don't shoot the messenger") to the group discussion.<br>• Meaningful Dialogue - Participants strive to keep the discussion open and to encourage questions. A successful meeting is one in which nuclear safety culture implications have been thoroughly aired, are well understood by the attendees, and collective judgments formed about the significance of those cultural implications.<br>• Dissenting Opinions - The meeting chairperson or designee documents dissenting opinions as necessary. Documenting dissenting opinions is intended to ensure they are fully aired and captured for further discussion at a later time and in other forums, as appropriate to the concern and the circumstances.<br>• Seeking Drivers - Participants discuss and seek to determine the drivers of challenges and opportunities brought into the discussion.<br>• Specific Actions - Participants define specific actions where practical. When the group commits to take actions, all participants agree to do their part to help make those actions happen.<br>• Ownership - Participants define owners and apply resources and require due dates for all actions.<br>• Tracking - As appropriate to the site, actions are tracked to completion through the Corrective Action Process or equivalent system. |

### 3.2.1 Nuclear Safety Culture Monitoring Panel

The nominal process is based on having a Nuclear Safety Culture Monitoring Panel (NSCMP) and a separate Site Leadership Team (SLT).

The NSCMP reviews the inputs most indicative of the health of the nuclear safety culture to identify potential concerns that merit additional attention by the organization. The panel also identifies organizational behaviors and practices that are strengths for fostering a strong nuclear safety culture.

The NSCMP is comprised of experienced individuals with diverse backgrounds and meets periodically (e.g., quarterly or triannually). Typically, panel members are chosen for their knowledge or ownership of the input data streams reviewed by the NSCMP. The primary role of the panel,

based on review of various inputs, is to identify the themes and insights of potential safety culture strengths or issues to the SLT or equivalent. Those inputs to the SLT are developed through the collective experience and reflective conversations of the NSCMP members.

Most sites provide staff support to preview, organize, and prioritize data for review by the NSCMP. This can take the form of screening, trending, or highlighting inputs that appear especially rich in cultural implications. The staff support helps the panel members to be better prepared for higher level discussions on cultural implications.

It is left to sites to determine how they will prepare safety culture data and insights for discussion by the SLT. So, too, sites should determine what the inputs to the SLT should be. The input to the SLT should be designed to enable a critical reflective discussion and should summarize key issues and insights related to the INPO traits. Actions arising from previous SLTs that remain outstanding or have been assessed for effectiveness should be included for consideration by SLT.

The NSCMP, if used, should have a formal charter. The charter should specify such things as: (a) membership and qualifications, (b) roles and responsibilities of the NSCMP, (c) frequency of meetings, (d) quorum requirements, and (e) expectations about the results of NSCMP meetings that will be transmitted to the SLT. Record retention requirements may be addressed in the charter or handled in accordance with site standards.

### 3.2.2 Site Leadership Team

The nominal process assumes the site will employ a Site Leadership Team (SLT), in addition to the NSCMP.

The SLT is responsible for reviewing plant performance for cultural implications and determining what actions are to be taken based on the SLT's conclusions. The SLT draws its conclusions from: (a) inputs from the NSCMP or equivalent (if used); (b) members' own review of the cultural input data; (c) members' experience and observations on the site; (d) SLT discussions of the themes and insights conveyed to it in writing by the NSCMP (or equivalent); and (e) other sources the SLT may choose at its discretion (e.g., information that may be known only the Site Vice President).

The SLT is expected to document its results in the form of actions and communications, and back those up with the commitment of site resources necessary for successful implementation. The degree of documentation should be commensurate with the significance of the actions recommended by the SLT. For example, simple, straightforward actions that can be accomplished without significant coordination or resources may warrant little documentation beyond being mentioned in the record of the SLT meeting that produced that recommendation. More complicated or significant actions may warrant detailed documentation and entry into CAP, depending on site requirements.

The SLT should have a formal charter. The charter should specify, for example: (a) membership and qualifications, (b) roles and responsibilities of the SLT, (c) frequency of meetings, (d) quorum requirements, and (e) expectations about the products of SLT meetings. Record retention requirements may be addressed in the charter or handled in accordance with site standards.

If the site has both an NSCMP and an SLT, the SLT should meet at least semiannually. If the site combines the NSCMP/SLT roles into a single entity, the combined entity should meet at least three times annually[6].

### 3.2.3 Fleet[7] Nuclear Safety Culture Executive Team

Organizations that provide corporate support, or the equivalent, may wish to consider forming a fleet-wide counterpart to the SLT. The formation and use of a fleet-wide culture review body is entirely at the discretion of the site, company or alliance implementing NEI 09-07. This fleet-wide culture monitoring body is described here as the Fleet Nuclear Safety Culture Executive Team (FNSCET). This group is charged with looking at corporate-level or fleet-wide safety culture, as determined by corporate leadership. This includes looking at the role of corporate decision-making in shaping site safety culture and looking for issues and trends in corporate or fleet safety culture. The FNSCET should be comprised of site vice-presidents, corporate executives, and/or other senior managers as the organizers of the fleet team think appropriate.

The FNSCET monitors trends of nuclear safety culture traits and attributes, using SLT and NSCMP (if present) report summaries, and collective insights gained from sources such as external inputs, management review meetings, INPO reports, and NRC inspections, and other information to foster an executive-level discussion and assessment of the health of nuclear safety culture across the fleet. The focus of FNSCET activities is an in-depth collegial discussion to determine shortfalls in nuclear safety culture traits that are common to multiple sites and safety culture concerns that require engagement of corporate leadership to resolve.

The FNSCET should have a formal charter. The charter should specify, for example:
(a) membership and qualifications, (b) roles and responsibilities of the FNSCET, (c) frequency of meetings, (d) quorum requirements, (e) expectations about the results of FNSCET meetings, and (f) the relationship of the FNSCET to the SLTs that roll up to it.

The FNSCET should meet at least semi-annually.

## 3.3 INTERFACES

Nominally, the work of the SLT[8] leads to two types of outcomes. One is corrective actions to address identified weaknesses (or strengths) in site safety culture. Included in the category of actions are those taken to reinforce and spread good practices that are observed to be contributing to the health of the safety culture. The other is communications. These include communications with the site population, external stakeholders, and the regulator. The "Interfaces" portion of the nuclear safety culture monitoring process addresses what becomes of actions and communications from the SLT. Included in Interfaces is the role of the site's external oversight organization, known as the Nuclear Safety Review Board (NSRB) or equivalent at many sites.

### 3.3.1 Communications

Part of the deliberations of the SLT concerns the communications needed on the issues and concerns the SLT identifies. These communications can take many forms, depending on the issue and audience to be served. For internal stakeholders (e.g., the site population), communication of

[6] Minor variation around this nominal frequency is allowed when needed to accommodate unplanned outages or other extraordinary demands on the time of site leadership.
[7] "Fleet" here includes sites belonging to a shared parent company, and those belonging to a service and support alliance, such as the STARS Alliance or the Utilities Service Alliance organizations.
[8] Or Fleet Nuclear Safety Culture Executive Team, for organizations having such a fleet-wide team, in addition to the SLT at each site.

the SLT results and its actions enables them to learn from the SLT's work. Sites may also consider communicating results with external stakeholders (e.g., the corporate staff, plant neighbors, local media), to build trust. The degree and formality of documentation of actions and communications arising from the SLT meetings should be commensurate with the level of significance of the issue being addressed.

### 3.3.2 Site Response

The SLT is responsible for determining what actions are necessary to address any nuclear safety culture issues. In addition, the SLT is responsible for assessing the impact of prior actions and adjusting their approach as needed. The "Site Response" block in Figure 2 might include: changes in policies or programs, training, additional or more independent assessments, benchmarking, and other actions, described in Section 4. The site responses provide feedback into the process inputs and into the corrective action program. The NSCMP reviews the impact of the actions and reports results to the SLT. It is important for the site to consider when Independent Third Party Reviews or NSC surveys are an apprpriate response.

### 3.3.3 Site External Oversight

The output(s) from the SLT/culture review process are conveyed to the site's external oversight body (Nuclear Safety Review Board or equivalent) as determined by site or corporate leadership. The experience and independent views of the NSRB can help the SLT in many ways, including bringing an external look at cultural problems which may not be apparent to those living in the culture day to day. The NSRB also provides valuable oversight of the culture monitoring process. Its review can help challenge site leadership to remain self-critical throughout the culture monitoring process.

The role and expectations of the NSRB in culture monitoring should be documented appropriately (e.g., in the charters of the NSRB, NSCMP, and SLT; or in a site procedure governing the culture monitoring process). This documentation should describe what the NSRB will receive from the SLT and what the NSRB will provide when it has a question or feedback on culture monitoring at the site.

The site Quality Assurance (QA), Nuclear Safety Oversight (NSO), or equivalent organizations fill roles which complement independent oversight of the monitoring process. The responsibilities of QA or equivalent organizations with regard to safety culture monitoring and their interfaces with the culture monitoring process should be defined and documented appropriately.

### 3.3.4 Regulatory Oversight

The licensee has primary responsibility for maintaining a healthy nuclear safety culture. Nevertheless, as with most other activities at the site, the NRC can observe and, as authorized, inspect activities related to nuclear safety culture monitoring. Resident inspectors gain their own impressions of the health of the safety culture from their daily encounters with site personnel. In addition, the NRC's baseline and special inspection procedures direct the NRC to look at the state of the site safety culture. The NRC's investigation of whistleblower allegations also informs the NRC's perception of site culture. The inspection process provides valuable independent oversight of site cultural health. Feedback from NRC inspections is an important input to the culture monitoring process.

# 4 A DEEPER LOOK AT THE CULTURAL REVIEW BODIES

The nominal process is based on the use of two cultural review bodies: a panel of subject matter experts (the NSCMP) and site decision-makers (the SLT). (A third body, the FNSCET, which resembles the SLT at the fleet level, may be useful for fleets to consider establishing.) The former (NSCMP) culls from the vast amount of inputs the items judged to be most important to gauging and improving the health of site nuclear safety culture. The NSCMP reports its findings and recommendations to the latter body, the SLT. The SLT makes the final decision on those items and takes decisions and commits resources to address cultural matters. This section elaborates on important features of the Nuclear Safety Culture Monitoring Panel, the Site Leadership Team, and the Fleet Nuclear Safety Culture Executive Team.

## 4.1 NUCLEAR SAFETY CULTURE MONITORING PANEL

### 4.1.1 Purpose

The Nuclear Safety Culture Monitoring Panel has two primary functions.

The first function is to review emergent issues and trends that could affect the health of the site nuclear safety culture, and develop a better understanding of their safety culture implications. Using the knowledge and experience of its members, the NSCMP identifies emerging themes and develops insights based on the information deemed to be most pertinent to nuclear safety culture. The panel's preparations and discussions foster a shared understanding of the health of the nuclear safety culture and what needs to be done to strengthen it.

The second function is to report to the SLT on that shared understanding of items the panel considers significant to the health of the site nuclear safety culture. The panel reports its findings to the SLT for their awareness and action.

### 4.1.2 Focus and Method

The NSCMP reviews site inputs to identify cultural strengths and potential concerns that merit additional attention by the organization. The panel reviews the progress in the corrective action program for previously identified nuclear safety culture issues, whether site identified, or identified in external reports. This includes NRC inspection reports, Nuclear Safety Culture Assessments, and industry evaluations. Thus, the inputs to the NSCMP reflect the capability of the site to identify and resolve problems in the plant and in the site organization itself.

The functions typically performed by, or for, the NSCMP (or its equivalent[9]) include the following:

- Collect process inputs for a defined time period
- Organize the inputs (e.g., categorize them, or bin them by trait)
- Review the aggregated data for patterns, trends and outliers
- Discuss and develop potential insights from the data
- Gauge the health of affected traits and, as appropriate, overall safety culture[10]
- Recommend actions and communications, as appropriate
- Review status and effectiveness of prior safety culture-related actions
- Report to the SLT

[9] The description here is based on the nominal process comprised of a culture monitoring panel reporting to the site leadership team. Other configurations are possible, as presented elsewhere in this document.

[10] Alternatively, sites may see the primary role of the NSCMP as gathering and screening the cultural inputs fed to the SLT, and assign the SLT the responsibility for gauging the health of the individual traits and overall safety culture. The choice is up to each site.

### 4.1.3 Observations

Membership on the NSCMP should make panel members more conscious of nuclear safety culture implications of behaviors they observe in their day-to-day activities at the site. This gives the panel members a heightened responsibility to scrutinize safety practices daily to assess: (a) the environment created by the local[11] management, and how it conditions individual attitudes, (b) the attitudes of individuals in all departments and at all levels, and (c) actual safety experience at the plant, which reflects the real priority given to safety in the organization. The objective is to ensure the integration of safety responsibilities in the management chain with a prominence matching that of other main functions.

### 4.1.4 Orientation

The work of the NSCMP is highly subjective and based on knowledge gained through experience and in-depth knowledge of the input data streams reviewed by the panel members. Thus, it is not expected that sites should establish accredited training requirements for panel members. Nevertheless, sites should consider providing some form of orientation or familiarization, through pre-job briefings, seminars or training for the members of the NSCMP. NSCMP members should be familiar with such things as:

- NEI 09-07 process
- INPO Traits of a Healthy Nuclear Safety Culture
- IAEA's INSAG-4[12] guidance; and
- Other safety culture models such as that of Ron Westrum[13] and Thomas Gilbert's Behavioral Engineering Model[14].

Additional aids for panel members (e.g., training cues or materials for staff to build proficiency at screening, binning, charting, and reporting) should be considered.

The goal is a systematic approach to data collection and data reduction. Quarterly summaries should reflect the local trends and include a roll up of the aggregate. The process should include feedback to the staff on the quality of the input they provide and how it is used.

### 4.1.5 Emergent Issues

Emergent issues with cultural implications may arise between meetings of the NSCMP. The NSCMP ensures that such emergent issues are brought to the attention of the SLT. These could include externally- or internally-generated issues that indicate dissatisfaction with the site's nuclear safety focus, responsiveness, effectiveness of the corrective action program, or treatment of personnel, to name just a few.

It is recommended that sites establish a process for the NSCMP to review significant, urgent issues in an expedited manner. One option to facilitate rapid reviews is to establish a subcommittee of the NSCMP that can be assigned to perform them when necessary. Another option is to specify an alternative quorum for panel review of an urgent item. The panel charter or operating procedures should define specific criteria that must be met for the rapid review process to apply. The rapid review process should ensure that the results are reported to the SLT in a timely manner.

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[11] "Local" here means wherever the observation takes place and could range from the specific work site, to a section or department, or the site leadership, depending on the context in which the observation occurs.

[12] "Safety Culture", A Report by the International Nuclear Safety Advisory Group, Safety Series No. 75-INSAG-4, International Atomic Energy Agency, Vienna, 1991.

[13] See, for example, Ron Westrum's "A Typology of Organisational Cultures", Quality and Safety of Health Care, Vol. 13 (Supplement II), pages ii22-ii27, 2004.

[14] See Thomas F. Gilbert's Human Competence: Engineering Worthy Performance, Pfeiffer Publishing Company, San Francisco, 2007.

### 4.1.6 Report

The panel reviews all the process input data and looks for strengths and potential safety culture problems across the process inputs. The identified strengths and problems are linked to the INPO *Traits of a Healthy Nuclear Safety Culture*. The report includes the scope of the inputs reviewed, specific trends observed over time, any adverse nuclear safety culture impacts identified, the organizations involved, and actions being taken to mitigate or address the impacts.

The report to the SLT should include trends or potential issues that could be early indications of a nuclear safety culture problem or strength. The panel's analysis and report should address behaviors as well as outcomes.

*Tip: Panels have found it useful to present trends for a rolling 18-month interval and emphasize the slope and direction of the trend, instead of thresholds or "health bands".*

In the nominal process, the primary function of the NSCMP is to provide the SLT with "enriched intelligence" on the health of the safety culture. This intelligence facilitates the work of the SLT and enables the SLT to judge the health of the traits. Thus, the NSCMP is not required to gauge the health of individual nuclear safety culture traits. However, if a site finds it useful for the NSCMP to "grade" every trait, the site certainly may do so.

## 4.2 SITE LEADERSHIP TEAM

The nuclear safety culture Site Leadership Team (SLT) is comprised of the senior-most management personnel onsite charged with the safe operation of a nuclear plant. The SLT is typically comprised of the Site Vice President, Plant Manager, and senior managers from the primary line organizations at the site. Typically, these would include the heads of Operations, Maintenance, Engineering, Radiation Protection, Chemistry, Oversight, Security, and Regulatory Assurance.[15] The chairperson of the NSCMP (if used in the site process) should participate in the SLT meetings, as well, to give the SLT members additional insights about the report from the NSCMP when needed. Other positions to consider for membership on the SLT or attending meetings of the SLT include the managers responsible for the Corrective Action Program, Operating Experience Program, and the Self-Assessment and Benchmarking Programs. As with the NSCMP, some sites invite an industry peer to attend the SLT meeting, to bring a fresh perspective into the discussion.

The SLT assesses the site data against the INPO *Traits of a Healthy Nuclear Safety Culture*. This should occur in a group setting designed to promote reflective conversation about the inputs reviewed by SLT members. During this review, the SLT examines a variety of input sources that reflect the health of the organization's work environment to discern trends and early signs of nuclear safety culture challenges. The report of the NSCMP (if used in the site process) and previous nuclear safety culture assessments are primary inputs to the SLT, but other inputs may also enter into the SLT's discussions.

The most valuable insight often comes from the frank discussion of nuclear safety culture based on the SLT members' own observations and insights. As the organization's senior leaders, the SLT members bring diverse experience to those discussions. The SLT members should bring their own interactions with site personnel, their field observations, and other individual experiences to help the SLT discern the health of the site safety culture. The end result is an improved understanding among the members of the SLT of where to apply their efforts to further improve

[15] Titles for these positions vary across the industry, so take these as illustrative not definitive.

the site's nuclear safety culture. The primary products of the SLT are: (a) their collective assessment of the health of each nuclear safety culture trait; (b) actions to improve the health of the safety culture; and (c) communications to support the actions they identify.

The SLT's review is documented using the INPO *Traits of a Healthy Nuclear Safety Culture* as a basis to identify strengths, areas found acceptable, and opportunities for improvement. Follow-up actions should be tracked (e.g., through CAP or other means). Strengths and improvement opportunities should be communicated to the site to promote desired behaviors and actions that foster a healthy nuclear safety culture.

## 4.3 Fleet Nuclear Safety Culture Executive Team Review

A fleet-wide culture monitoring body is an option to be considered for sites that operate as part of a corporate fleet or an alliance. The Fleet Nuclear Safety Culture Executive Team (FNSCET) is charged with looking at corporate-level or fleet-wide safety culture. This includes looking at the role of corporate decision-making in shaping site safety culture and looking for issues and trends in corporate safety culture. The FNSCET is chaired by the Chief Nuclear Officer (CNO) or an executive designated by the CNO. The FNSCET should be comprised of site vice-presidents, corporate executives, and/or other senior managers with responsibilities for governance, oversight, and support of fleet nuclear operations. Fleets or alliances may use different language and have the responsibilities designated at a different organizational level. This team is focused on identify emerging trends or faint signals that may be common to multiple fleet sites and may require corporate-level engagement to resolve the shortfalls.

The FNSCET is designed to function similar to the site SLT. The FNSCET examines a variety of information reflecting the health of safety culture throughout the fleet such as summaries from site NSCMP and NSCLT meetings, safety culture metrics or trends, management review meetings, external (independent) reviews, INPO reports and discussions, and NRC findings. Looking at the entire fleet's safety culture performance, the FNSCET can discern subtle trends and early indications of nuclear safety culture shortfalls. The most valuable insights are gathered from the frank discussion of nuclear safety culture based on the FNSCET members' observations and insights. As the fleet's senior leaders, the FNSCET members possess broad, diverse backgrounds with leadership experience in nuclear plant operations and support functions. The result is an improved understanding among the members of the FNSCET of where their efforts to further improve the site's nuclear safety culture need to be applied.

The FNSCET's nuclear safety culture review is documented using the INPO's Traits of a Healthy Nuclear Safety Culture to identify strengths, areas found acceptable, and areas in need of improvement. Follow-up actions are tracked. Strengths and improvement opportunities are communicated throughout the fleet organization to drive desired behaviors and actions for fostering a strong nuclear safety culture.

# APPENDIX 1: PROCESS OPTIONS

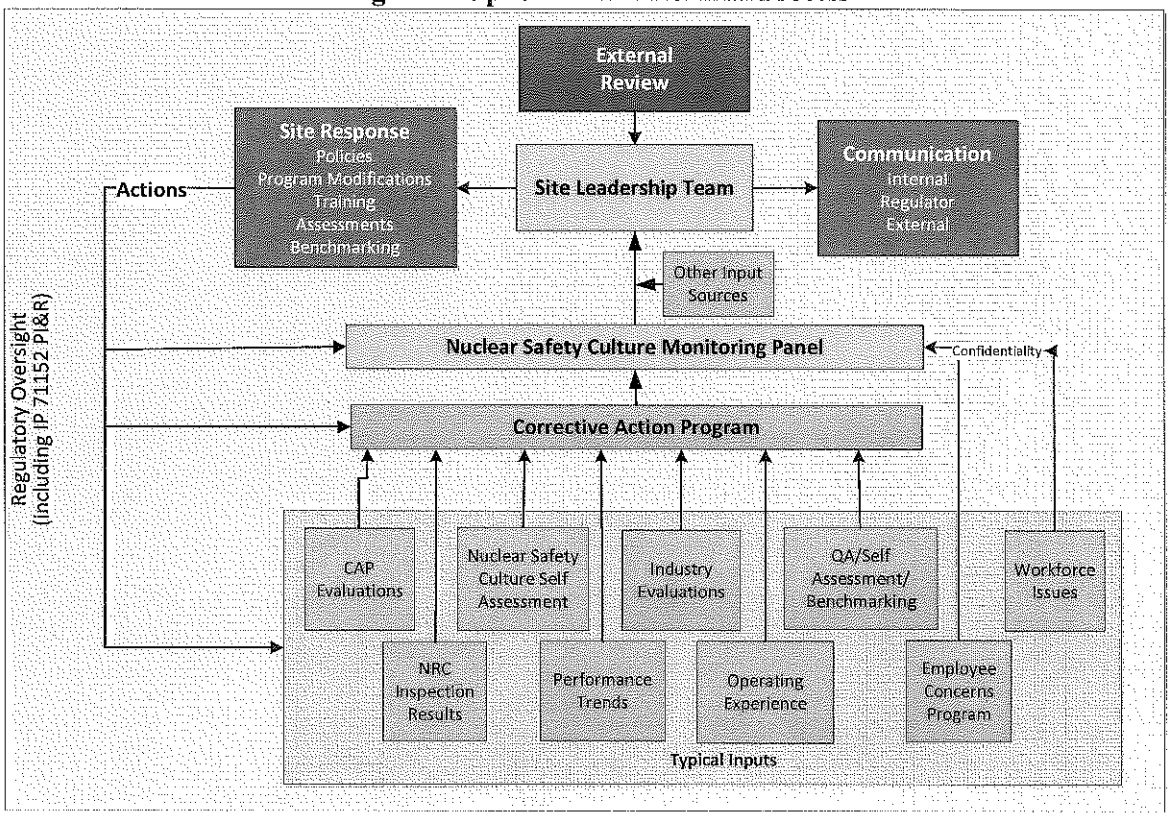
Experience from initial implementation of NEI 09-07 showed the importance of tailoring the culture monitoring process to the organization and culture of each site and company. Every site has somewhat different organizations and processes in place. To be most effective and efficient, the culture monitoring process should leverage existing structures and processes as much as possible. As the culture monitoring process matures, sites may find that key features of the monitoring process can be accomplished more efficiently within other existing processes, such as the corrective action process.

To help sites consider other options for accomplishing nuclear safety culture monitoring, this appendix describes five options built on the nominal process. These are provided as examples are not intended to be the only way for people to monitor their safety culture. Sites are free to choose from the options listed below or develop their own process. Appendix 2 provides a checklist to guide sites in verifying that they have in place the core elements of the culture monitoring process.

## OPTION 1 – THE NOMINAL PROCESS

This option was described in NEI 09-07, Revision 0. In this process a designated team (the Nuclear Safety Culture Monitoring Panel) reviews a variety of inputs and generates a report to the site leadership team. The key feature of Option 1 is that the NSCMP (and its support staff, if any) has primary responsibility for reviewing the array of process inputs to identify those most significant for gauging the health of the nuclear safety culture.

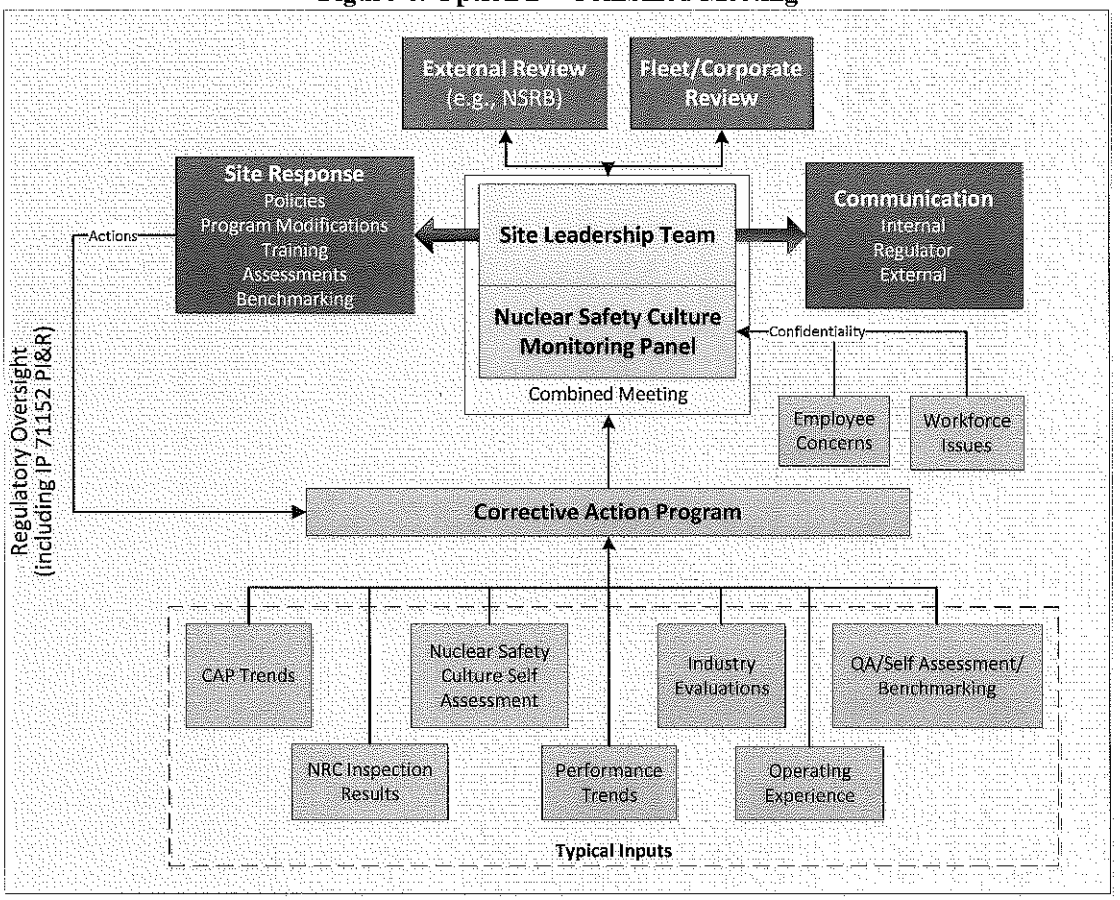
**Figure 3: Option 1 – The Nominal Process**



## OPTION 2 – COMBINED MEETING

Option 2 is much like Option 1, but replaces the separate meetings of the NSCMP and SLT with a combined meeting. In Option 2, the NSCMP gathers the input data as in Option 1. However, the meeting in which the NSCMP reviews the data actually occurs with the SLT present. In effect, the NSCMP simultaneously reviews the data and presents their recommendations to the SLT. There is not a separate meeting where the NSCMP judges the input data and identifies the data with significant cultural implications. Option 2 addresses concerns voiced by sites that struggled to differentiate the work of the NSCMP from that of the SLT, and to schedule separate meetings with NSCMP members on the recommended quarterly frequency and SLT members on the recommended semiannual frequency.

**Figure 4: Option 2 – Combined Meeting**

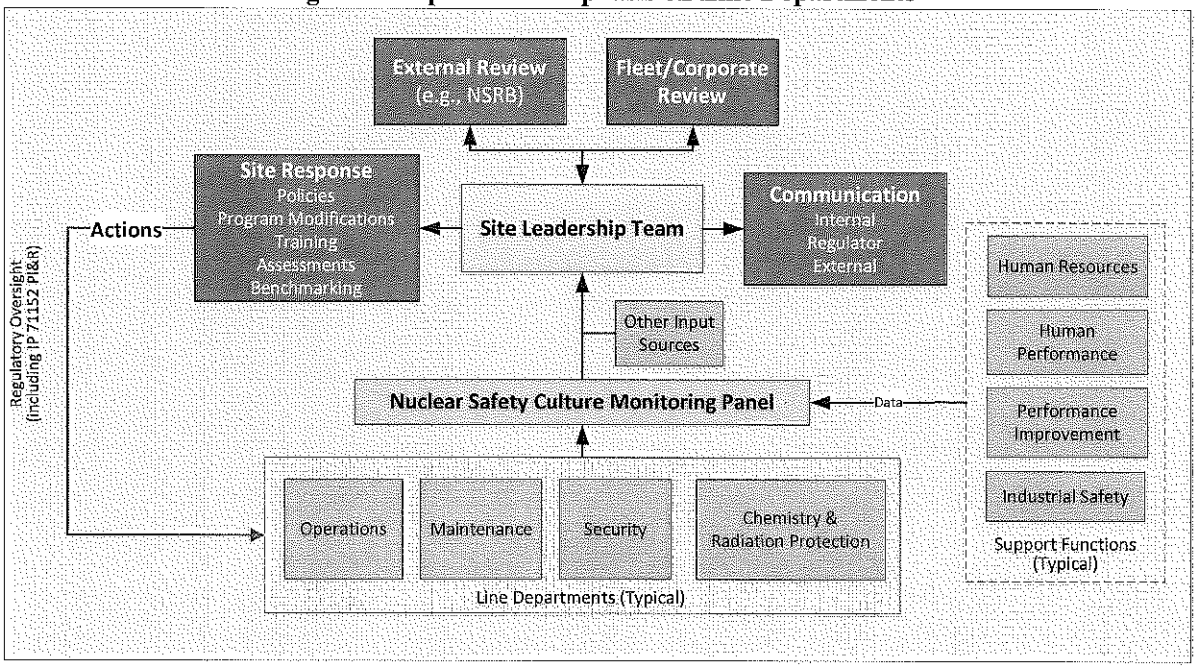


## OPTION 3 – EMPHASIS ON LINE DEPARTMENTS

Option 3 presumes the line departments have lead responsibility for monitoring the health of the nuclear safety culture in their own department. Option 3 thus fosters the involvement of the line departments in the culture monitoring process. Option 3 may also enable the site as a whole to implement the front end of the culture monitoring process more efficiently. In effect, Option 3 "decentralizes" the initial document review for safety culture implications. That could mean that fewer people have to "touch" a given document in order to recognize its cultural implications. In practice the departmental input would be developed by the departmental CAP coordinator as part of another process and concurrence obtained from the department head. This could be done via an existing process or developed solely as an input into this process. This approach is not intended to limit the line representation to the departments shown in the diagram. Sites should include all sizable departments, such as work management and engineering.

In addition to line departments owning responsibility for monitoring their own cultural health, the organizational units providing support functions (e.g., human resources, human performance, performance improvement, industrial safety, and so forth) also provide inputs to the NSCMP. Input from the Employee Concerns Program (ECP) would be provided by an ECP representative on the NSCMP. This would likely reduce the challenge of protecting the confidentiality of sensitive ECP data that might otherwise have to circulate to the whole NSCMP. Other features of this process from the work of the NSCMP through the other process elements remain the same as presented in Option 1.

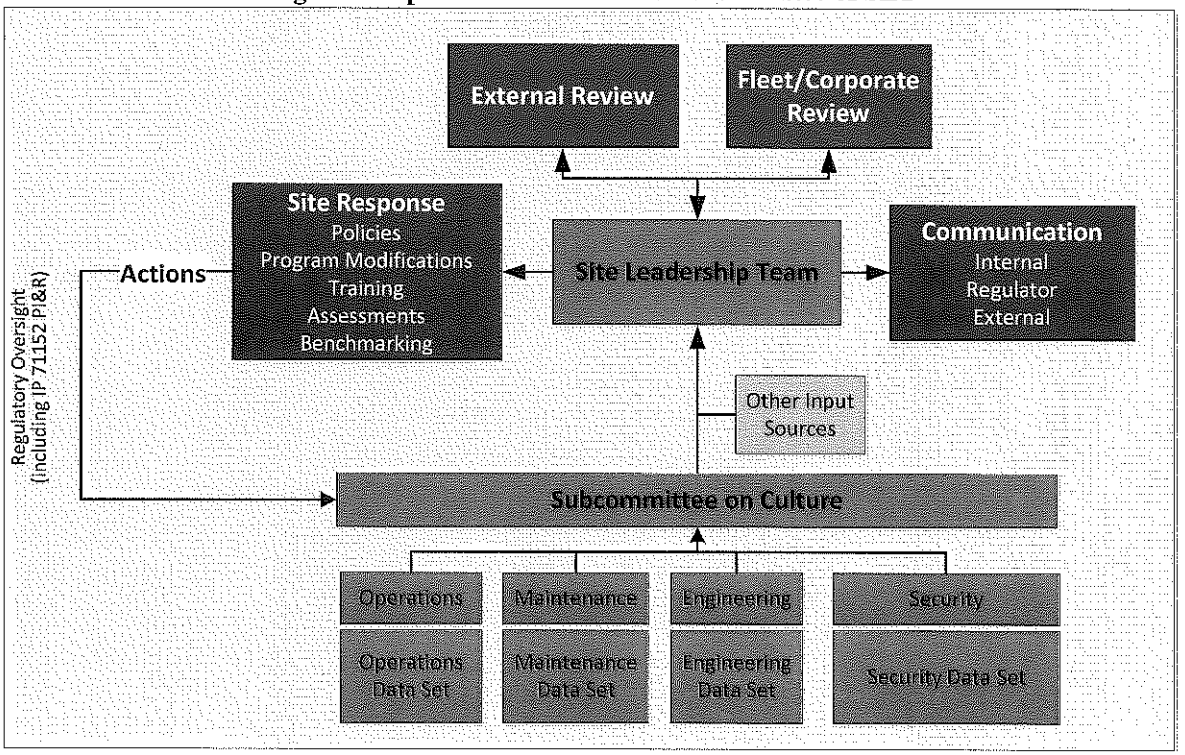
**Figure 5: Option 3 – Emphasis on Line Departments**



## OPTION 4 – NSCMP AS SUBCOMMITTEE OF SLT

Option 4 treats the culture monitoring body as a subcommittee of the SLT. This approach is modeled on the approach of the Nuclear Safety Review Board, which uses subcommittees to focus on functional areas. The Subcommittee on Culture is comprised of representatives with expertise in the major operational areas of the site (e.g., operations, maintenance, engineering and security). The subcommittee representatives identify the richest data set in their operational areas. This approach acknowledges that the best data set for understanding cultural health in one operational area may be very different from that in other areas. For example, the level or trend in security officer overtime may be an important indicator of safety culture in the security organization. In operations, a single CAP issue related to Procedure Use and Adherence might be the most significant indication of the health of the safety culture among control room operators. Option 4 recognizes the uniqueness of each area and vests greater responsibility for culture monitoring in the owners of each operational area. As happens in NSRB meetings, the Subcommittee on Culture would depend on a collegial review of the cultural data to identify the cultural implications in the data and recommendations for action by the SLT.

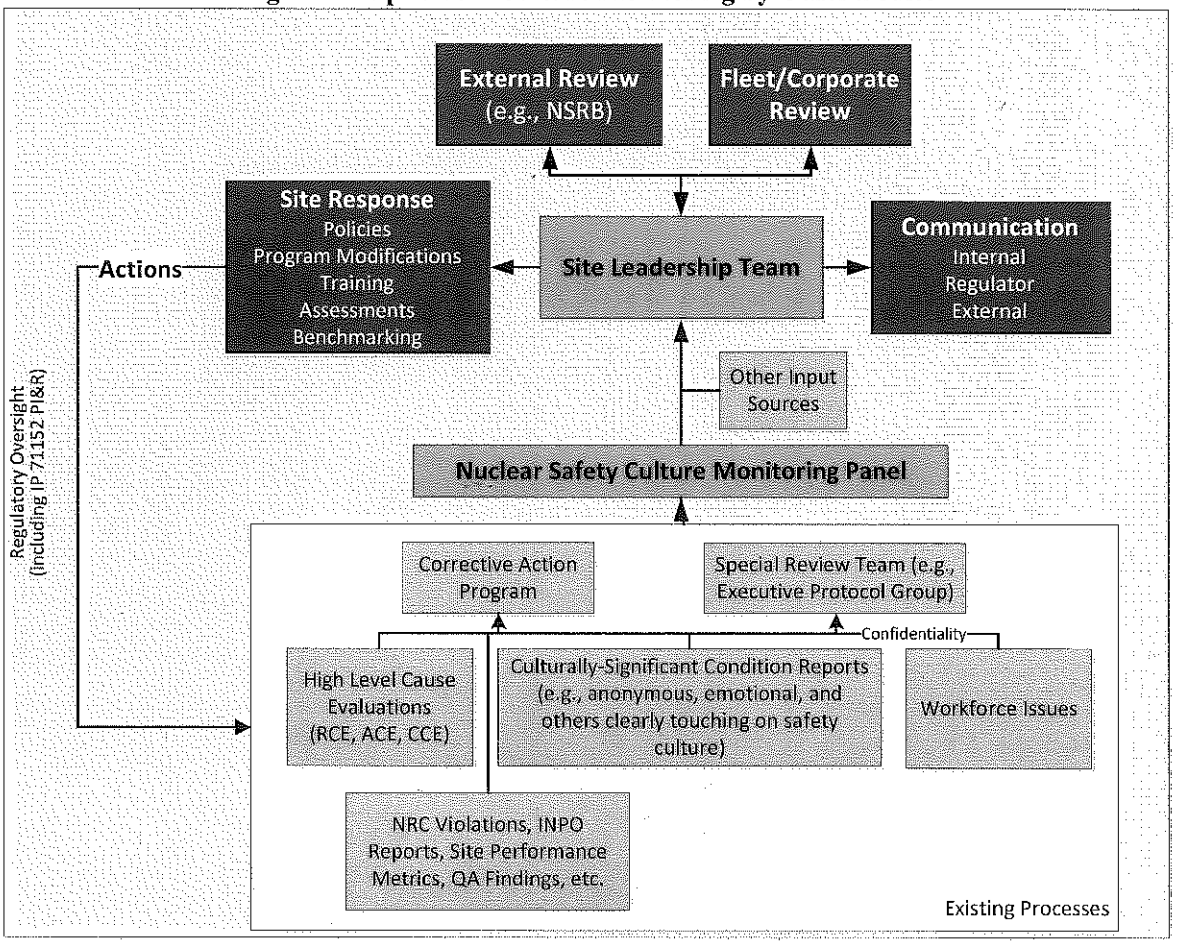
**Figure 6: Option 4 – NSCMP as Subcommittee of SLT**



## OPTION 5 – CULTURE MONITORING BY OTHER BODIES

Option 5 illustrates an example of utilizing an existing site group as a component in the nuclear site culture monitoring process. In this example, the site has a senior management team (named the Executive Protocol Group) that was established to ensure sensitive workforce and culturally-significant matters are given the timely, collegial discussion by site leadership that they deserve. Thus, the EPG fulfills important responsibilities assigned to the NSCMP in Option 1. The illustration of Option 5 shows the EPG as contributing high-value-added input to the NSCMP. Option 5 preserves the significant input from CAP as well (e.g., both high-level cause evaluations and low-level safety culture condition reports). The CAP input focuses on plant issues, while the EPG receives a wide variety of inputs, mostly from Human Resources and the Employee Concerns Program. The EPG thus provides the necessary confidentiality for ECP and HR process inputs as they are considered in the nuclear safety culture monitoring process.

**Figure 7: Option 5 – Culture Monitoring by Other Bodies**



## APPENDIX 2 - CHECKLIST FOR IMPLEMENTATION OF NEI 09-07

Following is provided as a guide for sites to gauge their implementation of NEI 09-07, Option 1, the nominal process. Sites choosing to implement other Options presented in NEI 09-07 can adapt this checklist as necessary to their circumstances.

| Process Element | Minimum Elements |
|---|---|
| Process Inputs | Establish process inputs from a variety of appropriate sources known or expected to yield insights on the health of the nuclear safety culture. |
| Nuclear Safety Culture Monitoring Panel | Define roles, responsibilities and membership of the NSCMP.<br>Specify and provide pre-job briefings, orientation, familiarization, or training as appropriate to enhance understanding of the role of the NSCMP members.<br>Specify frequency of NSCMP meetings.<br>Describe the expected output from the NSCMP to the SLT. |
| Site Leadership Team | Define roles, responsibilities and membership of the SLT.<br>Specify frequency of SLT meetings.<br>Describe the expected input from the NSCMP and the expected output from the SLT. |
| Site Response | Specify site responsibilities for addressing actions emerging from the culture monitoring process.<br>Specify process for tracking resolution of culture-related actions taken by the SLT or equivalent. |
| Communication | Specify how the results of NSCMP and SLT meetings are communicated to internal and external stakeholders. |
| External Review | Specify the role of the NSRB or equivalent outside review bodies in the work of the NSCMP and the SLT. |
| Corporate/Fleet/Alliance Oversight | If this option is chosen by the parent company or alliance, specify the role of fleet or corporate oversight in monitoring nuclear safety culture. |