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DRAFT**

# **Fostering a Strong Nuclear Safety Culture**

**June 2009**



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**Nuclear Energy Institute**

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## **ACKNOWLEDGEMENTS**

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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 contractors on site. INPO *Principles for a Strong Nuclear Safety Culture* defines nuclear safety culture as an organization's values and behaviors—modeled by its leaders and internalized by its members—that serve to make nuclear safety the overriding priority. The strength of an organization's dedication to safe operation can be seen in its nuclear safety culture.

This guideline on Fostering a Strong Nuclear Safety Culture describes the industry approach to assessing and addressing nuclear safety culture issues. It places primary responsibility on line management, and in particular, on the site leadership team. The goal is to provide an ongoing holistic, objective, transparent and safety-focused process, which uses all of the information available (e.g., the corrective action program, performance trends, NRC inspections, industry evaluations, nuclear safety culture assessments, self assessments, audits, operating experience, employee concerns program, etc.) to provide an early indication of potential problems, develop effective corrective actions and monitor the effectiveness of the actions. The ongoing assessment of nuclear safety culture is conducted using the terminology of the INPO principles and attributes of nuclear safety culture.

The industry guideline also provides for multiple external looks at the nuclear safety culture. These include the Nuclear Regulatory Commission, industry evaluations (e.g., INPO), external nuclear safety review boards, and external members of safety culture assessments.

The guideline includes a sample Nuclear Safety Culture Monitoring Procedure which licensees can use to develop their site specific procedure.



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## **1 THE IMPORTANCE OF FOSTERING A STRONG NUCLEAR SAFETY CULTURE**

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 contractors on site. INPO *Principles for a Strong Nuclear Safety Culture* defines nuclear safety culture as an organization's values and behaviors—modeled by its leaders and internalized by its members—that serve to make nuclear safety the overriding priority. The strength of an organization's dedication to safe operation can be seen in its nuclear safety culture.

Nuclear safety culture is to an organization what personality is to an individual: an intangible facet that can be seen only through behaviors and espoused values. It is under constant change; it represents the collective behaviors of the organization, which adapt over time as the organization and its members change and apply themselves to their daily activities. As problems are encountered, the organization learns. Successes and failures become ingrained into the organization's nuclear safety culture and form the basis for the means by 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. Nuclear safety is a collective responsibility. No one in the organization is exempt from the obligation to ensure nuclear safety first.

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. Even though nuclear safety culture is an intangible concept that cannot simply be measured through quantitative means, it is possible to monitor the health of an organization's nuclear safety culture based on 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 itself facilitates the desired behaviors of a learning organization – one that places nuclear safety as its overriding priority and relentlessly seeks ways to continuously improve itself.

The nuclear power industry recognizes the importance of building and maintaining a strong nuclear safety culture. This takes the commitment of its leaders and the dedication of every individual. In depth assessments are performed to gauge the health of each nuclear power plant's nuclear safety culture. For example, INPO Significant Operating Experience Report 02-4, *Reactor Pressure Vessel Head Degradation at Davis-Besse Nuclear Power Station*, recommends a periodic self-assessment to determine to what degree the organization has a healthy respect for nuclear safety and that nuclear safety is not compromised by production priorities. 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 when compared to industry standards of excellence in this area.

Since nuclear safety culture evolves over time, 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. The station management has many sources of data available that may indicate the potential of a nuclear safety cultural issue. This data includes station performance indicators, NRC inspection reports, the corrective action program, the employee concerns program, quality assurance audits and quality control inspections, self-assessments, benchmarking, and operating experience program data.

The purpose of this document is to provide a framework for the operators of nuclear power plants to monitor their nuclear safety culture on a continuous and real-time basis. The guidance provided is intended to provide one means of accomplishing nuclear safety culture monitoring, but should not be viewed as the only way. This guideline should form the basis for developing station-specific tools that address the elements discussed in this document and that each station can use to foster continuous improvement of nuclear safety culture.

## **2 PROCESS DESCRIPTION**

The industry approach to assessing and addressing nuclear safety culture issues places primary responsibility on line management, and in particular, on the site leadership team. The purpose is to provide an objective, transparent and safety-focused process, which uses all of the information available (e.g., performance trends, NRC inspections, industry evaluations, nuclear safety culture assessments, self assessments, audits, operating experience, employee concerns program, etc.) to provide an early indication of potential problems, develop effective corrective actions and monitor the effectiveness of the actions.

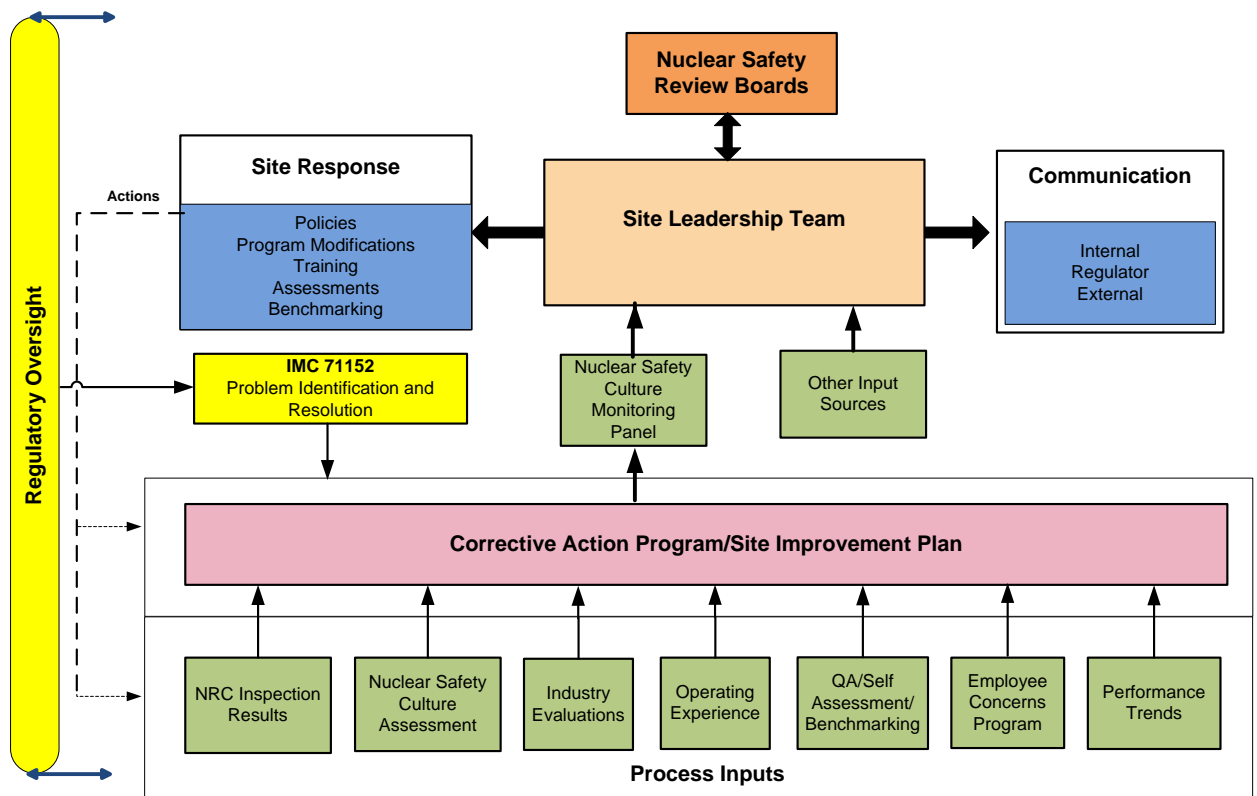
While it is not possible to directly measure culture, and thus there must be some subjectivity, there are aspects of plant conditions which can be trended to provide a warning to site leadership to determine if nuclear safety cultural issues contributed to the condition. Process weaknesses, discovered through audits, self assessments, inspections, etc., also can provide symptoms of nuclear safety cultural problems. 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 all of these tools and take effective action.

### **2.1 PROCESS ELEMENTS**

The proposed process is shown below and is comprised of nine distinct process elements.

1. Process Inputs
2. Corrective Actions
3. Other Input Sources
4. Nuclear Safety Culture Monitoring Panel
5. Site Leadership Team
6. Site Response
7. Communication
8. External Input
9. Regulatory Oversight

## Site Nuclear Safety Culture Process



### 2.1.1 Process Inputs

The following are the inputs to the nuclear safety culture process. For each input, there are data (e.g., deficiencies, violations, or weaknesses) which can be reviewed in combination with data from other inputs to determine whether there is a nuclear safety

culture issue. The INPO *Principles for a Strong Nuclear Safety Culture* describes the essential attributes of a healthy nuclear safety culture. They provide a useful framework for assessing and categorizing the data, and in combination, are used to identify potential nuclear safety cultural issues for action. Using a consistent model and terminology throughout the entire process will allow clear communication of issues which the entire site can understand and respond to. Each input has an owner whose responsibilities include assessing the data against the INPO principles and attributes and reporting their results to the site leadership team on a periodic basis.

- **NRC inspection results.** These include the baseline inspections of plant and processes (especially the problem identification and resolution inspection which also looks at safety conscious work environment and any past nuclear safety culture assessments), supplemental inspections, event follow-up, etc. These are extremely valuable inputs for the site, and may incorporate insights into nuclear safety culture.
- **Nuclear Safety Culture Assessment.** Using a common industry guideline, sites conduct a self assessment of nuclear safety culture on a biennial basis. This is already an INPO SOER 02-4 requirement. What has been added is a common industry approach. The approach is discussed in section 5, Nuclear Safety Culture Assessments, Including Third Party Assessments. These assessments are available to NRC on site.
- **Industry Evaluations.** For example, INPO evaluations are conducted on an approximately biennial basis, in the alternate year from the nuclear safety culture assessment. Included in the INPO evaluation is an assessment of nuclear safety culture. Thus the site would receive a nuclear safety culture assessment almost every year. These industry evaluations are available to NRC on site.
- **Operating Experience.** Data on previous deficiencies (such as operations, design, and equipment) are used to improve procedures and processes and to avoid future problems. Information from OE can also be used to look for nuclear safety culture issues.
- **QA/Self Assessment/Benchmarking/Behavioral Observations.** Each site performs a variety of self reviews. These include audits required in the quality assurance programs, department self assessments, and benchmarking of other sites in the industry (or other industries). It also includes observation programs by managers and supervisors in the field.
- **Employee Concerns Program/ Safety Conscious Work Environment.** This program looks at the site's safety conscious work environment and provides opportunities to raise issues outside the normal chain of command. It may not be appropriate to enter some of the ECP issues in the corrective action program, but the issues will be considered by the site leadership team.

- **Site Performance Trends.** Each site has a broad suite of indicators which it uses to assess performance. These indicators go beyond the ROP performance indicators (which generally measure plant-wide outcomes) and assess intermediate outcomes, which, if not corrected, could lead to safety system failures, scrams or events. Trends can be developed in these indicators and the cause of the trend – be it process or design deficiencies, training, resources, or nuclear safety culture issues – can be examined and corrective action taken. Examples include operator workarounds, control room deficiencies, preventive maintenance deferred, open positions, etc. These trends would be available to NRC on site.
- Note that a site may have additional process inputs that it finds effective in helping to assess nuclear safety culture.

### 2.1.2 Corrective Actions

Problems in all of these areas are fed into the site's **corrective action program** where they are assessed for significance, including whether root cause analyses will be conducted. Both apparent and root cause analyses will include an assessment against the INPO principles and attributes. The corrective action program is used to identify trends which can be assessed for nuclear safety culture issues. In some cases, the corrective action program is not the appropriate location for the problem; for example, some ECP/SCWE issues, allegations, perhaps some nuclear safety culture assessment issues, and some organizational or personal issues. Cultural and organizational issues may more appropriately be placed in a **Site Improvement Plan**, or whatever term the site uses, or may be brought to the site leadership team's attention by the Nuclear Safety Culture Monitoring Panel.

### 2.1.3 Other Inputs

There may be additional inputs that come directly to the attention of the site vice president, such as allegations or other sensitive information, which are not appropriate to be handled through the corrective action program, but are important in assessing nuclear safety culture.

### 2.1.4 Nuclear Safety Culture Monitoring Panel

The Nuclear Safety Culture Monitoring Panel monitors the inputs most indicative of the health of the organization's nuclear safety culture to identify potential concerns in the work environment that merit additional attention by the organization. This cross-functional panel is comprised of experienced senior managers with diverse backgrounds. Panel reports are provided to the Site Leadership Team (SLT). The panel's membership is limited to protect the confidentiality of personal information. More details on this panel are included in section 3.

### **2.1.5 Site Leadership Team**

The **Site Leadership Team** is responsible for reviewing plant performance and taking a holistic view of all of the potential indications of nuclear safety culture. The team should be guided by the INPO principles and attributes. The team will address the subtle issues gleaned from the variety of process inputs described above, as well as specific items identified through ECP and nuclear safety culture surveys and assessments. The Site Leadership Team will receive periodic reports from the Nuclear Safety Culture Monitoring Panel and as issues emerge which the panel believes warrants SLT immediate attention. While maintaining an ongoing sensitivity to nuclear safety culture issues, the team will also meet semi-annually to discuss and assess cultural issues. Prior to the semi-annual meeting, the SLT will receive a written report from the Nuclear Safety Culture Monitoring Panel summarizing issues and trends identified from the process inputs. More details on the SLT are included in section 4.

### **2.1.6 Site Response**

The Site Leadership Team is responsible for determining what actions are necessary to address any nuclear safety culture issues. In addition, the team is responsible for assessing the effectiveness of prior actions and redirecting these actions where appropriate. **Site Response** actions might include: changes in policies, program modifications, training, additional or more independent assessments, benchmarking, etc. The site responses, of course, provide feedback into the process inputs and into the corrective action program and/or site improvement plan.

### **2.1.7 Communication**

The Site Leadership Team is also responsible for ensuring there is appropriate **Communication** of its conclusions and actions. This communication is internal to the site workforce and if appropriate, corporate, and external, if appropriate, to the public. Raw data and reports, such as the INPO evaluation and the nuclear safety culture assessment would be available on site for NRC review.

### **2.1.8 External Input**

The **Nuclear Safety Review Board** (or equivalent) provides an additional perspective to the site leadership team. The experience and independent views of the board can assist the site leadership team in many ways, including bringing a fresh look at cultural problems which may be invisible to those living in the culture day to day. Corporate organizations or fleets may also be used to provide external input.

### **2.1.9 NRC Oversight**

The NRC retains a **Regulatory Oversight** footprint in the process through its residents and baseline and supplemental inspections. It also retains traditional enforcement and the allegation and chilling effect processes. The inspection process provides valuable independent oversight to the licensee. Inspectors' insights on safety culture would continue through the assignment of crosscutting aspects to inspection findings. If there

are multiple crosscutting aspects in year's time, the licensee should use all of the data available to test whether a significant nuclear safety culture issue exists. The practice of assigning substantive crosscutting issues would be discontinued, because the new industry process provides a broader and more holistic assessment of nuclear safety culture. The SCCI approach attempts to arrive at general conclusions on nuclear safety culture with insufficient data. The inspection procedure, Identification and Resolution of Problems (IP 71152) will be of particular value. Its current objectives are:

“01.01 To provide for early warning of potential performance issues that could result in crossing thresholds in the action matrix.

01.02 To help the NRC gage supplemental response should future action matrix thresholds be crossed.

01.03 To provide insights into whether licensees have established a safety conscious work environment.

01.04 To allow for follow-up of previously identified compliance issues (e.g., NCVs).

01.05 To provide additional information related to the crosscutting areas that can be used in the assessment process.

01.06 To determine whether licensees are complying with NRC regulations regarding corrective action programs.

01.07 To verify that the licensee is identifying operator workarounds at an appropriate threshold and entering them in the corrective action program.”

This inspection procedure includes specific questions related to raising safety questions. (When the industry approach is accepted, this procedure and other NRC internal guidance would need to be revised to remove the references to SCCIs and to focus more on how well the site is using the new process to identify and resolve safety culture issues.) Additionally, the inspectors review any safety culture assessments which have been performed. The NRC footprint would also include observation on site of various aspects of the industry safety culture approach, including observation of the Nuclear Safety Culture Monitoring Panel and SLT semi-annual meetings. NRC communicates results to the public through inspection reports, assessment letters and public meetings.

If a plant enters column 4 of the action matrix, the NRC could request the licensee to conduct a third party nuclear safety culture assessment.

### **3 NUCLEAR SAFETY CULTURE MONITORING PANEL**

#### **3.1 PURPOSE AND MEMBERSHIP**

The Nuclear Safety Culture Monitoring Panel (NSCMP) monitors process inputs which are indicative of the health of the organization's nuclear safety culture to identify potential concerns in the work environment that merit additional attention by the organization.

The NSCMP is comprised of seasoned nuclear professionals with broad, diverse backgrounds in managing nuclear power plants. The panel, through its chairperson, reports to the Site Leadership team. Membership should include managers or supervisors with responsibilities for the process inputs (e.g., corrective action program, employee concerns, self assessments, regulatory compliance, etc.)

The panel has two major functions:

- It reviews emergent issues or trends that could impact nuclear safety culture health to ensure the issues are appropriately addressed, and
- It prepares a quarterly report to the Site Leadership Team on trends or potential issues in the process inputs that could be early indications of a nuclear safety culture problem.

#### **3.2 EMERGENT ISSUES**

The NSCMP ensures that emergent issues or trends with the potential to impact the site nuclear safety culture health are brought to the attention of the site vice president. These could include externally- or internally-generated issues that indicate dissatisfaction with the site's nuclear safety focus, responsiveness to issues, effectiveness of the corrective action program, or treatment of personnel. Emergent trends that arise in process indicators in between the panel's quarterly report should be made known to the site vice president.

The NSCMP does not perform investigations and should reinforce line ownership for sound implementation of the corrective action process wherever possible.

NOTE: Individual companies will determine the responsibility for handling emergent nuclear safety culture issues of a personal nature. This is generally accomplished by the employee concerns program or another organizational unit established for this purpose.

#### **3.3 QUARTERLY REPORT TO SITE LEADERSHIP TEAM**

The NSCMP is responsible for monitoring the key process inputs for trends or potential issues which may be early indications of weaknesses in the site nuclear safety culture and



for reporting their results to the Site Leadership Team. These key inputs will demonstrate the inherent capabilities of the organization to identify and resolve problems in the nuclear power plant and the organization that operates it. It also reviews the progress in the corrective action program for previously identified nuclear safety culture issues, whether site identified, or identified in external reports, including NRC inspection reports, Nuclear Safety Culture Assessments, industry evaluations, etc. These process inputs are described below.

### **3.3.1 NRC Inspection Results**

The US NRC is the agency that regulates the safe use of nuclear power to protect the health and safety of the public. Onsite and regional NRC personnel periodically inspect all aspects of plant operations, including the processes used to identify and resolve issues at the station. If an inspection finding identifies that the deficiency may have been caused by a nuclear safety culture attribute, this will provide additional data for the panel to examine. Recurring violations in the same nuclear safety culture area should receive careful review by the panel to determine if other process inputs are signaling problems in the same area. The results of the problem identification and resolution inspection will also provide valuable input to the panel's assessments. The insights from the NRC provide another independent input to the SLT on the organization's nuclear safety focus.

### **3.3.2 Nuclear Safety Culture Assessment**

Stations assess nuclear safety culture every other year, as required by INPO SOER 02-04. The Nuclear Safety Culture Assessment Process Manual describes how this is done, using the INPO *Principles for a Strong Nuclear Safety Culture*. The findings of the NSCA may identify site wide or department specific areas which need senior management attention. The NSCMP will review areas identified as needing attention and provide a status on corrective actions to address issues identified in the last NSCA to the SLT.

### **3.3.3 Industry Evaluations**

INPO and WANO are the domestic and international industry groups that were formed to promote the highest standards of excellence in nuclear power plant operations. On a periodic basis, these organizations assess each domestic nuclear power plant against pre-established standards of excellence using a team of seasoned nuclear professionals from other stations. Team feedback on nuclear safety culture, station behaviors, standards, and performance provide valuable input. The NSCMP will review these reports and determine the site's progress in addressing weaknesses.

### **3.3.4 Operating Experience**

Data on previous deficiencies (such as operations, design, and equipment) are used to improve procedures and processes and to avoid future problems. Any nuclear safety culture related OE is identified and progress in addressing site concerns is reviewed by the NSCMP.

### **3.3.5 Quality Assurance/Self Assessment/Benchmarking/Behavioral Observation Programs**

The role of Quality Assurance and internal oversight staff is to independently assess the station and challenge the behaviors, standards, and performance of the organization. The relationship between the line and oversight personnel, as well as the nuclear safety culture insights of these knowledgeable individuals, can provide the NSCMP and SLT with data that indicate the willingness of the organization to learn and adapt. Similarly, self assessment, benchmarking and observation programs lend insights into nuclear safety culture. The NSCMP will review insights from these programs and provide that information to the SLT.

### **3.3.6 Employee Concerns Program**

The Employee Concerns Program (ECP) is an alternative path for all employees and supplemental workers who work in, or support, the licensee's nuclear business to express their nuclear safety and/or quality concerns in the event that an individual is not comfortable with, or is unable to successfully resolve nuclear safety or quality concerns using the other avenues available to them. Confidentiality is an important element of the ECP. Although it may not always be appropriate to share specific details related to concerns, at a minimum, any trends with respect to the type of issues brought into the ECP, or the increased use of the ECP by specific workgroups may be considered by the NSCMP and identified to the SLT.

In addition, the ECP is aware of NRC allegation statistics and may be able to provide trending information to the SLT in this area, as well.

### **3.3.7 Performance Trends**

Areas that can provide indication of the site's safety focus include human performance and equipment reliability indicators. Although human performance indicators vary site-to-site, they often include time clocks or hours worked without station level or department level consequential errors, trends of error rates, or lower level trends in Corrective Action Program data.

Similarly, equipment reliability is often monitored in unique ways that can include equipment failure clocks, system availability and reliability, and trends in consequential equipment failures. Although there may be variations in such metrics across the industry, the SLT uses these as tools to manage their station's issues. Variations in these indicators signal changes that the organization must respond to and such response can provide key nuclear safety culture insights.

Performance metrics associated with the challenges that the operator must face to run the plant can provide useful nuclear safety culture insights. Reactivity management challenges, operator burden and work-arounds, lit or disabled control room annunciators, control room deficiencies, backlogs of procedures, and similar areas provide insight on the organization's focus.

### 3.3.8 Corrective Action Program

Each of the process owners will use the corrective action program to look for nuclear safety culture issues in their area. In addition, the CAP should be used to identify trends across the entire data set of the CAP, for example, by using key words. The data from root cause determinations and apparent cause coding will also provide insights into potential nuclear safety culture issues and trends.

### 3.3.9 Report

The panel should review all the process input data and look for potential safety culture problems across, as well as within each of the process inputs. Incipient or identified weaknesses should be reported using the principles and attributes of INPO's *Principles for a Strong Nuclear Safety Culture*. The documentation should include the scope of the inputs reviewed, specific trends of the process inputs over time, any adverse nuclear safety culture impacts identified, the organizations involved, and actions being taken to mitigate or address the impacts.

Appendix 1 provides a sample procedure that includes the Nuclear Safety Culture Monitoring Panel.

## 4 SITE LEADERSHIP TEAM NUCLEAR SAFETY CULTURE REVIEW

The Site Leadership Team (SLT) is comprised of the senior-most management personnel charged with the safe operation of a nuclear plant. Although position titles may vary among different licensees, the SLT is typically comprised of a Site Vice President, Plant Manager, and department heads responsible for Operations, Maintenance, Engineering, Radiation Protection, and Regulatory Assurance. The senior manager responsible for the Corrective Action Program, Operating Experience Program, and Self-Assessment Program should also be included, if not typically a member of the SLT.

To promote and monitor the health of the organization's nuclear safety culture, the SLT periodically (e.g., semi-annually) assesses the station against the INPO *Principles for a Strong Nuclear Safety Culture*. This self-critique is intended to be reflective and performed by the SLT itself in a group setting. During this review, the SLT examines a variety of information that reflects the health of the organization's work environment to discern trends and early indications of nuclear safety culture challenges. The reports of the Nuclear Safety Culture Monitoring Panel and previous nuclear safety culture assessments, INPO evaluation nuclear safety culture findings, and any insights from the offsite nuclear safety review board (or equivalent) should be reviewed by the SLT prior to the meeting. The chairperson of the NSCMP should be present at the meeting.

Although a variety of inputs may be considered during the self-critique, the most valuable insight often comes from the frank discussion of nuclear safety culture based on the SLT's observations and insights. As the organization's senior leaders, the SLT possesses broad, diverse backgrounds in managing nuclear power plants and the nuclear

professionals that make up the workforce. The SLT is often able to discern subtle trends and early indications of nuclear safety culture challenges from personal interactions, in-field observations, and other means. The end result should be an improved understanding among the members of the SLT of where their efforts to further improve the station's nuclear safety culture should be applied. The SLT's Nuclear Safety Culture Review is documented using the principles and attributes of INPO's Principles for a Strong Nuclear Safety Culture to identify strengths, areas found acceptable, and areas in need of improvement. Follow-up actions are tracked. Appendix 1 provides a sample procedure that includes guidance and a template for the periodic SLT Nuclear Safety Culture Review.

### **Offsite Nuclear Safety Review Board**

Many stations benefit from a periodic, independent review of the organization's performance by a team of consultants whose focus is on nuclear safety. These consultants are often former regulators or leaders in the industry that spend time onsite to observe the behaviors and performance of the organization, as well as review historical data. Given their independent and industry-level perspectives, these consultants typically offer nuclear safety culture insights that may not be directly apparent to the SLT. The insights of the offsite safety specialists should be included in the periodic assessments conducted by the SLT.

## **5 NUCLEAR SAFETY CULTURE ASSESSMENTS INCLUDING THIRD-PARTY ASSESSMENTS**

### **5.1 INTRODUCTION**

This section briefly describes the Nuclear Safety Culture Assessment (NSCA) Process. The process applies the INPO *Principles for a Strong Nuclear Safety Culture* to assess a site's nuclear safety culture in terms of the INPO principles and attributes using a survey, interviews, and observations. The assessment covers both company and contractor personnel. The assessment report provides strengths, weaknesses and recommendations for action.

The NSCA builds on a very successful program developed and implemented over the past five years by the Utilities Service Alliance in response to INPO SOER 02-4, which calls for sites to conduct a nuclear safety culture assessment every other year. While the USA approach is designed to be conducted as a self assessment, this industry guideline can be conducted as a self, independent or third party assessment by increasing the sample size of interviews and observations, providing team members who are not site employees, and providing additional focus on areas of concern, as requested by the site vice president. The table at the end of this section summarizes the key aspects of the NSCA and the differences between a self, independent and third-party assessment.

Detailed information and instructions for conducting the NSCA are contained in the Nuclear Safety Culture Assessment Process Manual.

## **5.2 CURRENT REQUIREMENTS FOR NUCLEAR SAFETY CULTURE ASSESSMENT**

In developing the NSCA, industry looked at what the requirements and current practices were for conducting nuclear safety culture assessments. INPO SOER 02-4 calls for a nuclear safety culture assessment every other year. There are no specific requirements on how to conduct the assessment. Some utilities do an assessment entirely in-house using company resources (either all onsite resources, or a combination of fleet or corporate resources); some are in the USA program of 17 stations which include both internal assessors and external loaned utility assessors; some use consultants; and there may be other variations. The methodology (using just a survey, or surveys and interviews and observations) and the safety culture model applied also vary across industry. The industry also looked at the IAEA's Safety Culture Assessment Review Team methodology for lessons learned in developing an effective common industry approach. Adoption of the NSCA Process Manual will provide a consistent approach across industry and will adopt the common language of the INPO *Principles for a Strong Nuclear Safety Culture*.

NRC requires a third-party nuclear safety culture assessment for plants in column 4 of the action matrix and has required an independent assessment in certain other instances when it is concerned about performance and substantive crosscutting issues. These assessments have been ad hoc and usually do not build on the same model as the self assessments, resulting in no economies of scale and difficulty in comparing the two assessments. (This is often the case because self assessments commonly use the INPO nuclear safety culture model of principles and attributes, whereas the independent or third party assessments have been organized around specific issues and the NRC's nuclear safety culture components and aspects.)

## **5.3 NSCA TEAM MEMBERSHIP**

The team members include a team leader, team executive, team members, host peer, administrative support, and an NSCA process manager. A behavioral scientist is optional for an independent assessment and required for a third party assessment. Details on the duties of the team are provided in the NSCA process manual, Tab B1. Selection of the team is discussed in Tab B2.

The team leader is responsible for the preparation and conduct of the assessment and for writing the assessment report. The team leader ensures that the team is adequately staffed to achieve the objectives of the assessment and selects the individuals to be interviewed. For a self assessment, the team leader may be from another utility or from the site's fleet or corporate offices, but not from the site. For an independent or third party assessment, the team leader must be from a different utility.

The team executive supports the team leader and brings senior management insight to the team. The executive works with and mentors the team in the development of results by bringing to bear an executive's viewpoint and personal experience in nuclear power plant management. For a self assessment, the team executive may be from another utility or from the site's fleet or corporate offices, but not from the site. For an independent or third party assessment, the team executive must be from a different utility.

Team members conduct individual and group interviews and observe activities at the station working in two person teams and using standard sets of questions based on the INPO principles and attributes. The number of team members depends on the objectives of the assessment. Normally, a self assessment includes eight team members; an independent or third party assessment will require more. For a self assessment, half of the team is from the site and the other half from the site's fleet, corporate offices, or other utilities. For an independent assessment, there are no site members. No more than half may be from the site's fleet or corporate offices, and the rest from outside the company. For a third party assessment, all must be from outside the company. Additional team members (e.g., expert consultants) may be added at the request of the site vice president.

The host peer and administrative staff are responsible for the logistics and site preparation and execution of the assessment. The process manager is responsible for ensuring the proper conduct of the assessment, in particular, the integration of interview and observation scoring.

A behavioral scientist (master's degree level) is suggested for an independent assessment and required for a third party assessment. This individual provides support to the team in developing insights and conclusions from the data, both survey and interviews; provides statistical support; provides suggestions for any additional interviews or lines of inquiry; and helps develop the conclusions and recommendations of the assessment.

#### **5.4 CONDUCT OF THE ASSESSMENT**

Before the assessment begins, there are a number of important activities. These include: selection of the team, performing a pre-assessment survey, pre-assessment document review by the team, site preparation (including interview scheduling) and pre-assessment planning meetings. Details of pre-assessment activities are provided in the NSCA process manual, Tab B2. Details on conducting the survey, which is automated, sent to the entire site population, and can distinguish demographics of level in the organization and department, are in Tab C.

Details on conducting the assessment are provided in Tab B3 of the NSCA process manual. The self assessment is one week in duration. An independent assessment's length would be determined by the team size and scope. A third party assessment would normally require more team members and likely last two weeks. A team meeting is held the Sunday before the assessment begins to review the objectives, schedule and assignments. The results of the survey are discussed to determine areas that the interviews should closely examine. After the entrance meeting on Monday, the team

begins its interviews and observations for the week. Craft and individual contributors are usually interviewed prior to managers. Detailed observation and interview forms, with questions based on the INPO principles and attributes, are provided in Tabs D and E of the NSCA process manual. Morning and afternoon meetings are held to adjust the schedule as necessary and to assess the data being collected. The administrative staff enter interview results into a data base which can track scoring by principle and attribute to ensure that all are covered. The scoring is automated and immediate, so that areas of concern become readily evident and additional interviews can be scheduled in targeted areas. Senior management is briefed on the results Thursday evening and an exit is conducted Friday. The final report is prepared by the team leader and provided to the site in about a month. The site is responsible for handling the report in accordance with its corrective action program. Some sensitive actions may require handling outside the corrective action program. The site will also widely communicate the results of the assessment and actions planned to address weaknesses. The details of the final report are provided in the NSCA process manual, Tab B4.

**Table 1: Graded Nuclear Safety Culture Assessment**

	<b>Self Assessment</b>	<b>Independent Assessment</b>	<b>Third Party Assessment</b>
Purpose	To meet INPO SOER 02-4 (Davis Besse) biennial assessment	Requested by Site VP who wants deeper/more specific review	95003: Plant in Column 4 of action matrix
Base Assumptions	Standard Assessment (pre-survey <sup>1</sup> , document review, interviews, behavioral observation, four 2 person teams, exit, written report) One week.	Standard Assessment plus review of additional area(s) of concern to Site VP  Could require an additional team of assessors to address issues. Typically one week.	Standard Assessment plus review of additional areas of concern determined by Site VP and Team Leader. Two weeks.
Work Product	Assessment Report, including: executive summary, survey and interview results by principle and attribute, follow-up from previous assessment, positive traits observed, conclusions and recommendations for improvement.	Same as Standard Assessment, with conclusions and recommendations on additional topic requested by Site VP.	Same as Standard Assessment with conclusions and recommendations addressing 95003 issues.
Coverage	INPO principles and attributes; minimal additional topics. Typically 40-60 interviews, 15 observations, survey offered to 100%; goal of 70% response (including write in comments)	Same as self assessment with coverage of additional areas of concern and perhaps 20% more interviews and observations.	INPO principles and attributes and additional topics selected to address 95003 issues. Approximately twice the number of interviews and observations as self assessment
Team Makeup	Team Leader (outside site)  Team Executive (outside site)  4 external team members (fleet, corporate or outside)  4 internal team members  1 Host peer  2 admin (host station)  1 NSCA or fleet process manager	Team Leader (outside utility)  Team Executive (outside utility)  8-10 external team members (at least half outside utility, remainder fleet or corporate)  1 Host peer  2 admin (host station)  1 NSCA or fleet process manager  Optional: Behavioral scientist (MA level)	Team Leader (outside utility)  Team Executive (outside utility)  10 external team members (outside utility)  1 Host peer  2 admin (host station)  1 NSCA or fleet process manager  Behavioral scientist (MA level)
Team Roles	<b>Team Leader:</b> Interfaces with host site and team members prior to the assessment; conducts ½ day training with team Sunday before assessment; leads	Same as Self Assessment.  <b>Behavioral scientist</b> works	Same as Self Assessment.  <b>Behavioral scientist</b> works

<sup>1</sup> Surveys performed by contractors may be substituted for the USA survey if the results are provided to the assessment team in terms of the INPO principles and attributes.



	<b>Self Assessment</b>	<b>Independent Assessment</b>	<b>Third Party Assessment</b>
	<p>team to ensure adequate number of interviews and observations are conducted; briefs site management; conducts exit; prepares report obtaining team concurrence.</p> <p><b>Team Executive:</b> Provides senior oversight of the team; preferred attendance for entire week; required Wed-Friday. Interfaces with site VP.</p> <p><b>Team Members:</b> Conduct interviews and observations as two person teams; develop conclusions and findings</p> <p><b>Host Peer:</b> Ensures logistics including badging, interview and observation scheduling; coordinates survey administration</p> <p><b>Admin:</b> Ensure smooth execution of assessment and manage data collection.</p> <p><b>Process Manager:</b> Ensures NSCA process is being followed.</p>	<p>at the direction of the Team Leader. Can provide insights into data analysis, interviewing techniques, and team findings and recommendations.</p>	<p>at the direction of the Team Leader. Can provide insights into data analysis, interviewing techniques, and team findings and recommendations.</p>
Training	<p><b>Team Leader:</b> Industry workshop training and previous assessor experience</p> <p><b>Team Members:</b> Interviewing skills training (or experience in conducting evaluations which involve interviewing) and ½ day team training prior to the assessment.</p> <p><b>Admin:</b> orientation by qualified Team Leader</p>	<p>Same.</p> <p><b>Behavioral scientist</b> (Masters Level) will be familiar with assessment methodology.</p>	<p>Same.</p> <p><b>Behavioral scientist</b> (Masters Level) will be familiar with assessment methodology.</p>
Document Review	<p>CAP, root cause evaluations past 2 years, policies on nuclear safety culture and SCWE, site process PIs, QA audits, self assessment and benchmarking reports, last nuclear safety culture assessment, NRC assessment letters, review ROP results on NRC website.</p>	<p>Same, with any additional materials provided by Site VP.</p>	<p>Same, with any additional materials provided by Site VP, and 95003 related reports.</p>

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## **APPENDIX 1: SAMPLE NUCLEAR SAFETY CULTURE MONITORING PROCEDURE**



## **NUCLEAR SAFETY CULTURE MONITORING**

### **1. PURPOSE**

- 1.1. The processes described in this document provide the guidance for monitoring the health of the nuclear safety culture.

### **2. TERMS AND DEFINITIONS**

- 2.1. **Nuclear Safety Culture:** An organization's values and behaviors – modeled by its leaders and internalized by its members – that serve to make nuclear safety the overriding priority. For purposes of this document, nuclear safety culture will be understood to include Safety Conscious Work Environment (SCWE).

### **3. RESPONSIBILITIES**

- 3.1. Chief Nuclear Officer (CNO). Maintain overall responsibility for nuclear safety culture.
- 3.2. Site/Corporate Vice President. Maintain responsibility for nuclear safety culture health in their organizations and designate members of the Nuclear Safety Culture Monitoring Panel.
- 3.3. Site Leadership Team (SLT). Periodically self-critique the health of the site nuclear safety culture.
- 3.4. Site/Corporate Management. Establish a healthy nuclear safety culture in their organizations.
- 3.5. Nuclear Safety Culture Monitoring Panel. Coordinate actions to monitor and reinforce nuclear safety culture. Report results to the SLT.

### **4. DETAILS**

- 4.1. This document uses the INPO *Principles for a Strong Nuclear Safety Culture* as the basis for assessment and improvement of nuclear safety culture. Leadership behaviors that support a strong nuclear safety culture are fundamental to the safe and reliable use of nuclear power. Nuclear safety is the responsibility of everyone in the organization, including contractors. Monitoring of nuclear safety culture is carried out by the Nuclear Safety Culture Monitoring Panel and the SLT.

#### 4.2. Nuclear Safety Culture Monitoring Panel

- 4.2.1 The Nuclear Safety Culture Monitoring Panel (NSCMP) monitors nuclear safety culture process inputs which are indicative of the health of the organization's nuclear safety culture to identify potential concerns in the work environment that merit additional attention by the organization. The panel has two major functions:
1. It reviews emergent issues or trends that could impact nuclear safety culture health to ensure the issues are appropriately addressed, and
  2. It prepares a quarterly report to the Site Leadership Team on trends or potential issues in the nuclear safety culture process inputs (see attachment 1) that could be early indications of a nuclear safety culture problem.
- 4.2.2. Site management is responsible for monitoring the organization's nuclear safety culture health and for notifying the Nuclear Safety Culture Monitoring Panel chairperson when a significant emergent issue or trend is identified that may impact or reflect on the nuclear safety culture health.
- 4.2.3. The Nuclear Safety Culture Monitoring Panel is not a substitute for effective issue resolution by site supervision and management. The panel ensures that issues that may impact the nuclear safety culture are properly recognized and managed to foster a healthy nuclear safety culture and its continuous improvement.
- 4.2.4. The Nuclear Safety Culture Monitoring Panel does not perform investigations and should reinforce line ownership for sound implementation of the corrective action program wherever possible. The panel follows an issue until it is satisfied that the proper investigation, actions, and communications are complete or being adequately tracked.
- 4.2.5. Membership
1. The Nuclear Safety Culture Monitoring Panel is comprised of at least five seasoned nuclear professionals with broad, diverse backgrounds in managing nuclear power plants.
  2. The Site Vice President should designate the membership of the Nuclear Safety Culture Monitoring Panel and a chairperson or panel leader.
  3. Alternates are permitted in place of those designated, but the use of alternates should be limited to no more than two.
  4. Members of the Nuclear Safety Culture Monitoring Panel typically include the managers or supervisors responsible for the safety culture process inputs (e.g, corrective action program, employee concerns, self assessments, oversight, regulatory affairs, site performance indicators, operating experience, etc.). Each

of the process inputs shall be assigned to a panel member to track and look for trends which could be indicative of a nuclear safety culture issue.

#### 4.2.6. Meeting Frequency

1. The Nuclear Safety Culture Monitoring Panel typically meets on a quarterly basis to review process inputs and trends; however, meeting frequency should be adjusted commensurate with the needs of the organization and management expectations.
2. If an emergent issue arises that warrants prompt attention of the Nuclear Safety Culture Monitoring Panel, the chairperson should be contacted to convene a meeting.

#### 4.2.7. Performance of Nuclear Safety Culture Monitoring

1. The chairperson will ensure a quorum is present (i.e., at least four members) and adequate functional area representation is provided to conduct a Nuclear Safety Culture Monitoring Panel meeting.
2. The chairperson will develop an agenda for the meeting and ensure appropriate material is available for review in advance of the meeting.
3. Panel members will present results and analysis of their assigned nuclear safety culture process inputs for discussion by the panel. These may include significant events or reports or trends identified in the data. The panel will discuss potential nuclear safety culture problems across, as well as within each of the process inputs. Incipient or identified weaknesses should be reported using the principles and attributes of INPO's *Principles for a Strong Nuclear Safety Culture*. The nuclear safety culture process inputs are listed in Attachment 1. The site may add any additional inputs it deems appropriate.
4. The Nuclear Safety Culture Monitoring Panel chairperson will ensure the results of the panel's deliberations, including any additional actions recommended to improve the site nuclear safety culture, are documented in a report to the Site Vice President. The report should include the scope of the inputs reviewed, specific trends of the data over time, any adverse nuclear safety culture impacts identified, the organizations involved, and actions being taken to mitigate or address the impacts.

#### 4.3. Site Leadership Team Nuclear Safety Culture Review

- 4.3.1. One important role of the Site Leadership Team (SLT) is to promote a healthy nuclear safety culture. As leaders, the SLT demonstrate their commitment to nuclear safety culture in actions and words. The SLT's behaviors are reflected in the priority that the organization places on nuclear safety and the results indicative of a learning organization.

4.3.2. The SLT is often able to discern subtle trends and early indications of nuclear safety culture challenges from personal interactions, in-field observations, and other means. Although a variety of inputs may be considered during the Nuclear Safety Culture Review, the most valuable insight often comes from the frank discussion of nuclear safety culture based on the SLT's observations and insights.

#### 4.3.3. Membership

1. The Site Leadership Team (SLT) is comprised of the senior-most management personnel charged with the safe operation of a nuclear plant. Although position titles may vary among different licensees, the SLT is typically comprised of the following:
  - A. Site Vice President (Chairperson)
  - B. Plant Manager
  - C. Department head responsible for Operations
  - D. Department head responsible for Maintenance
  - E. Department head responsible for Radiation Protection
  - F. Department head responsible for Engineering
  - G. Department head responsible for Regulatory Assurance
  - H. Department head responsible for the Corrective Action Program, Operating Experience Program, and Self-Assessment Program (if not included in one of the scope of responsibilities for one of the department heads above).

#### 4.3.4. Meeting Frequency

1. To ensure the station's nuclear safety culture is well-understood and continuously improving, the SLT periodically (e.g., semi-annually) assesses the station against the INPO *Principles for a Strong Nuclear Safety Culture*. This self-critique is intended to be reflective and performed by the SLT itself in a group setting.

#### 4.3.5. Performance of Nuclear Safety Culture Monitoring

1. The Site Vice President will ensure an adequate number of SLT members are present and adequate functional area representation is provided to conduct a Nuclear Safety Culture Review meeting.



2. The Site Vice President will designate a facilitator to support the SLT completing the Nuclear Safety Culture Review. Attachment 2 provides a template for this review.
  - A. The SLT shall prepare for the meeting by reviewing the reports of the Nuclear Safety Culture Monitoring Panel and may receive a briefing during the review to expand on items of interest. The SLT will also review previous nuclear safety culture assessments and any advice provided by offsite review boards. Corrective action program items related to nuclear safety culture should also be reviewed for status.
  - B. The SLT will discuss the nuclear safety culture principles and attributes listed in Attachment 2 and insights of the SLT on the organization's behaviors reflected in the INPO *Principles for a Strong Nuclear Safety Culture*.
  - C. The review should focus on nuclear safety culture health, the status and effectiveness of actions in place to maintain nuclear safety culture health, and identification of additional actions as necessary.
  - D. The SLT will assess and rate each nuclear safety culture attribute. The goal of the review is to reach consensus based on the information provided and the judgment of the SLT. Management judgment is a key factor that cannot be removed or quantified.
    - Strength: Condition has demonstrated positive results. Strengths are those conditions identified as having sufficient value to be shared in the industry.
    - Acceptable: Condition meets the expectations reflected in the nuclear safety culture principles. No issues that require correction to prevent performance declines.
    - Improvement opportunity: Condition does not fully meet expectations reflected in the nuclear safety culture principles.
  - E. Comments should be entered to describe the reason for the ratings and to note the effectiveness of any actions on progress.
  - F. Improvement opportunities or other significant issues resulting from the review will be documented in the Corrective Action Program.
3. The Site Vice President will review and approve the SLT Nuclear Safety Culture Review and forward the final results to the CNO.

5. **DOCUMENTATION**

- 5.1. Nuclear Safety Culture Monitoring Panel Report
- 5.2. Site Leadership Team Nuclear Safety Culture Review

6. **REFERENCES**

- 6.1. *Principles for a Strong Nuclear Safety Culture*, INPO, November 2004

7. **ATTACHMENTS**

- 7.1. Attachment 1: Nuclear Safety Culture Process Inputs
- 7.2. Attachment 2: Site Leadership Team Nuclear Safety Culture Review Template

## **Attachment 1**

### **Nuclear Safety Culture Process Inputs**

#### **NRC Inspection Results**

The US NRC is the agency that regulates the safe use of nuclear power to protect the health and safety of the public. Onsite and regional NRC personnel periodically inspect all aspects of plant operations, including the processes used to identify and resolve issues at the station. If the inspection finding identifies that the deficiency may have been caused by a nuclear safety culture attribute, this will provide additional data for the panel to examine. In addition, if the NRC identifies several inspection findings with the same potential nuclear safety culture issue, the panel should assess whether other process inputs point toward the same nuclear safety culture issue. The results of the problem identification and resolution inspection will also provide valuable input to the panel's assessments. The insights from the NRC provide another independent input to the Site Leadership Team (SLT) on the organization's nuclear safety focus.

#### **Nuclear Safety Culture Assessment**

Stations assess nuclear safety culture every other year, as required by INPO SOER 02-04. The Nuclear Safety Culture Assessment Process Manual describes how this is done, using the INPO *Principles for a Strong Nuclear Safety Culture*. The findings of the NSCA may identify site wide or department specific areas which need senior management attention. The NSCMP will review areas identified as needing attention and provide a status on corrective actions to address issues identified in the last NSCA to the SLT.

#### **Industry Evaluations**

INPO and WANO are the domestic and international industry groups that were formed to promote the highest standards of excellence in nuclear power plant operations. On a periodic basis, these organizations assess each domestic nuclear power plant against pre-established standards of excellence using a team of seasoned nuclear professionals from other stations. Team feedback on nuclear safety culture, station behaviors, standards, and performance provide valuable input. The NSCMP will review these reports and determine the site's progress in addressing weaknesses.

#### **Operating Experience**

Data on previous deficiencies (such as operations, design, and equipment) are used to improve procedures and processes and to avoid future problems. Any nuclear safety culture related OE is identified and progress in addressing site concerns is reviewed by the NSCMP.

## **Quality Assurance/Self Assessment/Benchmarking/Behavioral Observation Programs**

The role of Quality Assurance and internal oversight staff is to independently assess the station and challenge the behaviors, standards, and performance of the organization. The relationship between the line and oversight personnel, as well as the nuclear safety culture insights of these knowledgeable individuals, can provide the NSCMP and SLT with data that indicate the willingness of the organization to learn and adapt. Similarly, self assessment, benchmarking and observation programs lend insights into nuclear safety culture. The NSCMP will review insights from these programs and provide that information to the SLT.

### **Employee Concerns Program**

The Employee Concerns Program (ECP) is an alternative path for all employees and supplemental workers who work in, or support, the licensee's nuclear business to express their nuclear safety and/or quality concerns in the event that an individual is not comfortable with, or is unable to successfully resolve nuclear safety or quality concerns using the other avenues available to them. Confidentiality is an important element of the ECP. Although it may not always be appropriate to share specific details related to concerns, at a minimum, any trends with respect to the type of issues brought into the ECP, or the increased use of the ECP by specific workgroups may be considered by the NSCMP and identified to the SLT.

In addition, the ECP is aware of NRC allegation statistics and may be able to provide trending information to the SLT in this area, as well.

### **Performance Trends**

Areas that can provide indication of the site's safety focus include human performance and equipment reliability indicators. Although human performance indicators vary site-to-site, they often include time clocks or hours worked without station level or department level consequential errors, trends of error rates, or lower level trends in Corrective Action Program data.

Similarly, equipment reliability is often monitored in unique ways that can include equipment failure clocks, system availability and reliability, and trends in consequential equipment failures. Although there may be variations in such metrics across the industry, the SLT uses these as tools to manage their station's issues. Variations in these indicators signal changes that the organization must respond to and such response can provide key nuclear safety culture insights.

Performance metrics associated with the challenges that the operator must face to run the plant can provide useful nuclear safety culture insights. Reactivity management challenges, operator burden and work-arounds, lit or disabled control room annunciators, control room

deficiencies, backlogs of procedures, and similar areas provide insight on the organization's focus.

### **Corrective Action Program**

Each of the process owners will use the corrective action program to look for nuclear safety culture issues in their area. In addition, the CAP should be used to identify trends across the entire data set of the CAP, for example, by using key words. The data from root cause determinations and apparent cause coding will also provide insights into potential nuclear safety culture issues and trends.

### **Report**

The panel should review all the process input data and look for potential nuclear safety culture problems across, as well as within each of the process inputs. Incipient or identified weaknesses should be reported using the principles and attributes of INPO's Principles for a Strong Nuclear Safety Culture. The documentation should include the scope of the inputs reviewed, specific trends of the documents over time, any adverse nuclear safety culture impacts identified, the organizations involved, and actions being taken to mitigate or address the impacts.

**Attachment 2**  
**Site Leadership Team Nuclear Safety Culture Review Template**  
**Page 1 of 4**

Site \_\_\_\_\_

Date: \_\_\_\_\_

PRINCIPLE/ATTRIBUTES	MEASUREMENT INPUTS <sup>1</sup>	RATING/COMMENT
<p><b>1. Everyone is personally responsible for nuclear safety.</b></p>		<p><b><u>Rating</u></b> Strength Acceptable Improvement opportunity</p>
<ul style="list-style-type: none"> <li>▪ Clear lines of authority and responsibility</li> <li>▪ Personnel understand/accountable for high standards</li> <li>▪ Support groups understand their nuclear safety roles</li> <li>▪ Behaviors reinforced by rewards and sanctions</li> </ul>	<ul style="list-style-type: none"> <li>▪ Station and department clock reset data and human performance and technical human performance trends</li> <li>▪ Site nuclear safety culture data</li> <li>▪ Recent assessments</li> <li>▪ Employee feedback</li> <li>▪ Manager insights</li> </ul>	<p>Comments:</p>
<p><b>2. Leaders demonstrate commitment to safety.</b></p>		<p><b><u>Rating</u></b> Strength Acceptable Improvement opportunity</p>
<ul style="list-style-type: none"> <li>▪ Managers/supervisors provide leadership in the field</li> <li>▪ Management considers employee perspective</li> <li>▪ Managers involved in high-quality training</li> <li>▪ Communication of production goals does not send mixed signals</li> <li>▪ Important decisions communicated</li> </ul>	<ul style="list-style-type: none"> <li>▪ Site nuclear safety culture data</li> <li>▪ Management observation data for leadership behaviors</li> <li>▪ Recent assessments</li> <li>▪ Employee feedback</li> <li>▪ Manager insights</li> </ul>	<p>Comments:</p>

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<sup>1</sup> The site will establish appropriate additional measurement inputs

**Attachment 2**  
**Site Leadership Team Nuclear Safety Culture Review Template**  
**Page 2 of 4**

Site \_\_\_\_\_

Date: \_\_\_\_\_

PRINCIPLE/ATTRIBUTES	MEASUREMENT INPUTS	RATING/COMMENT
<p><b>3. Trust permeates the organization.</b></p>		<p><b>Rating</b>  Strength  Acceptable  Improvement opportunity</p>
<ul style="list-style-type: none"> <li>▪ People treated with dignity and respect</li> <li>▪ Personnel raise concerns without hesitation; concerns addressed</li> <li>▪ Employees encouraged to offer ideas and differing opinions</li> <li>▪ Managers regularly communicate to the workforce</li> </ul>	<ul style="list-style-type: none"> <li>▪ Site nuclear safety culture data</li> <li>▪ Recent assessments</li> <li>▪ Employee feedback</li> <li>▪ Manager insights</li> </ul>	<p>Comments:</p>
<p><b>4. Decision-making reflects safety first.</b></p>		<p><b>Rating</b>  Strength  Acceptable  Improvement opportunity</p>
<ul style="list-style-type: none"> <li>▪ Rigorous approach to problem-solving and decisions</li> <li>▪ Candid dialogue and debate</li> <li>▪ Distinguish between "allowable" choices and prudent choices</li> <li>▪ Revisit decisions when circumstances change</li> </ul>	<ul style="list-style-type: none"> <li>▪ Station and department clock reset data and human performance and technical human performance trends</li> <li>▪ Site nuclear safety culture data</li> <li>▪ Recent assessments</li> <li>▪ Employee feedback</li> <li>▪ Manager insights</li> </ul>	<p>Comments:</p>

**Attachment 2**  
**Site Leadership Team Nuclear Safety Culture Review Template**  
**Page 3 of 4**

Site \_\_\_\_\_

Date: \_\_\_\_\_

PRINCIPLE/ATTRIBUTES	MEASUREMENT INPUTS	RATING/COMMENT
<p><b>5. Nuclear technology is recognized as special and unique</b></p>		<p><b><u>Rating</u></b> Strength Acceptable Improvement opportunity</p>
<ul style="list-style-type: none"> <li>▪ Core reactivity treated with particular care</li> <li>▪ Critical safety functions and margins protected</li> <li>▪ Equipment meticulously maintained</li> <li>▪ Probabilistic risk analysis insights considered</li> <li>▪ High-quality procedures</li> </ul>	<ul style="list-style-type: none"> <li>▪ Reactivity management indicators</li> <li>▪ Equipment health indicators</li> <li>▪ Site nuclear safety culture data</li> <li>▪ Recent assessments</li> <li>▪ Employee feedback</li> <li>▪ Manager insights</li> </ul>	<p>Comments:</p>
<p><b>6. A questioning attitude is cultivated.</b></p>		<p><b><u>Rating</u></b> Strength Acceptable Improvement opportunity</p>
<ul style="list-style-type: none"> <li>▪ Contingencies developed for unforeseen possibilities</li> <li>▪ Anomalies and latent problems recognized/addressed</li> <li>▪ Personnel do not proceed when uncertain</li> <li>▪ Group-think avoided</li> </ul>	<ul style="list-style-type: none"> <li>▪ Station and department clock reset data and human performance and technical human</li> <li>▪ Site nuclear safety culture data</li> <li>▪ Recent assessments</li> <li>▪ Employee feedback</li> <li>▪ Manager insights</li> </ul>	<p>Comments:</p>



**Attachment 2**  
**Site Leadership Team Nuclear Safety Culture Review Template**  
**Page 4 of 4**

Site \_\_\_\_\_

Date: \_\_\_\_\_

PRINCIPLE/ATTRIBUTES	MEASUREMENT INPUTS	RATING/COMMENT
<p><b>7. Organizational learning is embraced.</b></p>		<p><b><u>Rating</u></b> Strength Acceptable Improvement opportunity</p>
<ul style="list-style-type: none"> <li>▪ Organization avoids complacency</li> <li>▪ Training upholds standards and expectations</li> <li>▪ OPEX used to prevent events</li> <li>▪ CAP process prevents repeat events</li> <li>▪ Issues prioritized and resolved</li> </ul>	<ul style="list-style-type: none"> <li>▪ Corrective Action Program and Operating Experience Program performance indicators</li> <li>▪ Site nuclear safety culture data</li> <li>▪ Training excellence indicators</li> <li>▪ Recent assessments</li> <li>▪ Employee feedback</li> <li>▪ Manager insights</li> </ul>	<p>Comments:</p>
<p><b>8. Nuclear safety undergoes constant examination.</b></p>		<p><b><u>Rating</u></b> Strength Acceptable Improvement opportunity</p>
<ul style="list-style-type: none"> <li>▪ Effective self-assessment and independent oversight</li> <li>▪ Periodic nuclear safety culture assessments used to improve</li> <li>▪ Organization responds to indicators of declining performance</li> <li>▪ Independent oversight feedback valued</li> </ul>	<ul style="list-style-type: none"> <li>▪ Self-Assessment Program health and performance indicators</li> <li>▪ Results of management review meetings</li> <li>▪ Results of onsite and offsite safety review committee proceedings</li> <li>▪ Results of internal independent audits and assessments</li> <li>▪ Nuclear safety culture surveys</li> <li>▪ INPO plant evaluation results and related improvement actions</li> </ul>	<p>Comments:</p>

List Corrective Action Program documents initiated for improvement opportunities or other issues and the responsible person for each item:

\_\_\_\_\_

Prepared by: \_\_\_\_\_

Approved by: \_\_\_\_\_