Building on the Principles
for Enhancing Professionalism

Principles for a Strong Nuclear Safety Culture

Addendum I: Behaviors and Actions That Support a Strong Nuclear Safety Culture

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Introduction

Addendum 1: Behaviors and Actions That Support a Strong Nuclear Safety Culture describes executive, senior manager, manager, supervisor, and individual contributor, including supplemental worker, nuclear safety behaviors and actions that contribute to a strong nuclear safety culture.

Every nuclear organization has many important behaviors and actions within its procedures, processes, written standards, and expectations. This document clarifies and highlights those behaviors and actions, at all levels, most critical to creating and maintaining a strong nuclear safety culture. It is intended to augment the *Principles for a Strong Nuclear Safety Culture.* It provides additional detail to help clarify, promote, and reinforce behaviors and actions that support a healthy nuclear safety culture. The behaviors and actions contained herein are representative and should not be considered comprehensive; as such, this document is not intended to be used as a checklist. It is encouraged that this document be considered for inclusion and use in self-assessments, root cause analyses, and training content, as appropriate.

Principles for a Strong Nuclear Safety Culture, developed in 2004 by an industry advisory group, describes the principles and essential attributes of a healthy nuclear safety culture. This addendum was developed by a second industry advisory group, whose members are listed at the end of this document.

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Principles for a Strong Nuclear Safety Culture and Their Definitions

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.

1. **Everyone is personally responsible for nuclear safety.**
Responsibility and authority for nuclear safety are defined and clearly understood. Reporting relationships, positional authority, staffing, and financial resources support nuclear safety responsibilities. Corporate policies emphasize the overriding importance of nuclear safety.

2. **Leaders demonstrate commitment to safety.**
Executive and senior managers are the leading advocates of nuclear safety and demonstrate their commitment both in word and action. The nuclear safety message is communicated frequently and consistently, occasionally as a stand-alone theme. Leaders throughout the nuclear organization set an example for safety.

3. **Trust permeates the organization.**
A high level of trust is established in the organization, fostered, in part, through timely and accurate communication. There is a free flow of information in which issues are raised and addressed. Employees are informed of steps taken in response to their concerns.

4. **Decision-making reflects safety first.**
Personnel are systematic and rigorous in making decisions that support safe, reliable plant operation. Operators are vested with the authority and understand the expectation, when faced with unexpected or uncertain conditions, to place the plant in a safe condition. Senior leaders support and reinforce conservative decisions.

5. **Nuclear technology is recognized as special and unique.**
The special characteristics of nuclear technology are taken into account in all decisions and actions. Reactivity control, continuity of core cooling, and integrity of fission product barriers are valued as essential, distinguishing attributes of the nuclear station work environment.

6. **A questioning attitude is cultivated.**
Individuals demonstrate a questioning attitude by challenging assumptions, investigating anomalies, and considering potential adverse consequences of planned actions. This attitude is shaped by an understanding that accidents often result from a series of decisions and actions that reflect flaws in the shared assumptions, values, and beliefs of the organization. All employees are watchful for conditions and activities that can have an undesirable effect on plant safety.

7. **Organizational learning is embraced.**
Operating experience is highly valued, and the capacity to learn from experience is well developed. Training, self-assessments, corrective

actions, and benchmarking are used to stimulate learning and improve performance.

8. **Nuclear safety undergoes constant examination.**
   Oversight is used to strengthen safety and improve performance. Nuclear safety is kept under constant scrutiny through a variety of monitoring techniques, some of which provide an independent "fresh look."

EXECUTIVES AND SENIOR MANAGERS

Executives and senior managers communicate the importance of safety culture.

- Establish and communicate a clear, documented nuclear safety policy.
- Execute an ongoing communication strategy using multiple mediums and messages to keep nuclear safety visible to the workforce. Share examples of how individual behaviors can positively and negatively affect nuclear safety.
- Ensure sufficient corporate resources are allocated to the nuclear organization for short- and long-term safe and reliable operation.
- Ensure a rigorous evaluation of the nuclear safety implications of non-approved budget items.
- Clearly explain and communicate the nuclear safety implications of resource allocation decisions.
- Facilitate relationships between corporate managers who support the nuclear organization and nuclear line managers, and educate corporate managers on their organization's support of nuclear safety.
- Create opportunities for senior corporate executives and external board members to meet with plant personnel and tour the plant.
- Ensure consideration of nuclear safety and operational focus during planning and execution of major changes.

Executives and senior managers demonstrate safety culture behaviors.

- "Walk the talk," modeling the correct behaviors, especially when line managers are resolving apparent conflicts between nuclear safety defense-in-depth and production. Be sensitive to unintended or conflicting messages that may be sent during operational decisions that impact production.
- Maintain high standards of personal conduct that promote teamwork, continuous improvement, and a positive work environment.
- Demonstrate interest in plant operations and actively seek out the opinions and concerns of workers at all levels. Follow up with station managers to ensure workers' concerns are being addressed.
- Obtain the training necessary to understand basic plant operation and the relationships between major functions and organizations.
- Obtain outside perspectives of nuclear safety through selection of qualified and critical independent safety review board members with diverse backgrounds and perspectives.
- Use diverse mechanisms such as employee surveys, independent assessments, external safety review board member feedback, and employee concern investigations to

regularly monitor station nuclear safety culture. Candidly communicate results and actions throughout the organization, including to the Board of Directors.

Executives and senior managers challenge others in the area of safety culture.

- Encourage personnel to challenge unsafe behavior and unsafe conditions, and support personnel when they stop plant activities for safety reasons.
- Ask questions to fully understand anomalies in plant conditions, especially how rigorously and the extent to which these anomalies are investigated. Challenge line managers to fully resolve degraded conditions, especially those of nuclear safety equipment.
- Look for and eliminate organizational and system-induced contributors to events and station weaknesses.

Executives and senior managers motivate others to exhibit safety culture behaviors.

- Reinforce nuclear safety as the overriding priority.
- Reinforce the expectation that the reactor be shut down when procedurally required, when the margin for safe operation has degraded unacceptably, or when the condition of the reactor is uncertain.
- Reinforce expectations that station leaders must welcome and solicit employee concerns and maintain a safety-conscious work environment throughout the entire nuclear organization.
- Reward individuals who report nuclear safety concerns. Publicly recognize behaviors at all levels that exhibit a strong safety culture.
- Reinforce the use of the corrective action program, self-assessments, benchmarking, and training to improve nuclear safety.
- Provide candid feedback and coaching to individuals and groups that do not demonstrate expected nuclear safety behaviors. Take prompt and decisive action when leaders do not meet expectations.
- Use demonstrated nuclear safety behaviors as a criterion for leader selections.
- Reinforce managing defenses and a strong sensitivity to staying more than one error away from an event of consequence.

MANAGERS

Managers communicate the importance of safety culture.

- Communicate and teach desired nuclear safety behaviors to the workforce. Share examples of how individuals can positively and negatively affect nuclear safety. Verify that the intended messages were actually heard and understood.
- Maintain a safety-conscious work environment by providing opportunities for open discussion of nuclear safety and identification of perceived unsafe behavior and unsafe conditions. Follow up and provide feedback on actions taken.
- Solicit active employee involvement in the corrective action program, self-assessments, benchmarking, and training to improve nuclear safety.
- Support formal assessments of workplace attitudes and nuclear safety culture, and act on issues that affect trust in management or detract from a healthy nuclear safety culture.
- Attend and conduct training on safety culture, including a safety-conscious work environment, and communicate the appropriate behaviors to maintain a healthy safety culture.

Managers demonstrate safety culture behaviors.

- "Walk the talk," modeling the correct behaviors, especially when resolving apparent conflicts between nuclear safety defense-in-depth and production. Be sensitive to unintended or conflicting messages that may be sent during operational decisions that affect production.
- Personally understand the safety significance of initiatives and projects that are under review for resource allocation and budget decisions.
- Maintain cognizance of the status of the plant, the nuclear safety risks associated with work in the field, and other parallel station activities.
- Monitor and provide field oversight to high-risk work activities to validate expected conditions and to intervene as necessary.
- Make strategic and day-to-day operational decisions that reflect nuclear safety as the overriding priority.
- Maintain critical safety function defense-in-depth by developing appropriate contingencies.
- Maintain high standards of personal conduct that promote teamwork, continuous improvement, a questioning attitude, and a positive work environment.
- Obtain the training and education necessary to understand plant operation, including safety systems designed to maintain critical safety functions. Gain understanding of the

plant safety analysis components and systems that impact core damage frequency and containment integrity.

— Demonstrate a bias for action to fully resolve degraded conditions.

— Actively monitor for potential distractions that adversely affect nuclear safety and operational focus during periods of major change.

Managers challenge others in the area of safety culture.

— Ensure that the reactor will be shut down when procedurally required, when the margin for safe operation has degraded unacceptably, or when the condition of the reactor is uncertain.

— Question decision-making and justifications that appear to not consider nuclear safety impacts sufficiently.

— Question analysis assumptions during decision-making and ask, "What is the most likely undesired consequence of this action?"

— Routinely challenge operators and engineers to demonstrate an understanding of declining trends and provide support for projects and initiatives that reverse those trends.

— Look for and eliminate organizational and system-induced contributors to events and station weaknesses. Seek to understand the bases for worker decisions that contributed to such events.

Managers motivate others to perform safety culture behaviors.

— Consistently reinforce nuclear safety as the overriding priority, and use actual examples to exemplify desired behaviors. Publicly praise behaviors in peers, colleagues, and direct reports that reflect a strong safety culture.

— Reward individuals who report safety concerns or stop operations for safety reasons.

— Reinforce with all direct reports that they must welcome and solicit employee concerns and respond appropriately to them.

— Ensure the reporting of important problems as well as nonconsequential near misses.

— Reinforce expectations to supervisors and front-line workers to take the time to do the job right the first time and to seek advice when unsure. Reinforce the expectation to stop when plant conditions do not match expected responses during field evolutions.

— Provide candid feedback to people and groups that are not demonstrating high standards.

— Reinforce personal accountability for adherence to high standards. Actively correct behavior; and, as appropriate, use specific examples in group settings for added

reinforcement. Be sensitive to the negative impact that intimidation and personal attacks have on trust and on maintaining a safety-conscious work environment.

— Take prompt and decisive action when subordinates do not model or reinforce desired nuclear safety behaviors. Use demonstrated nuclear safety behaviors as a criterion for selecting subordinates.

— Reinforce the management of defenses and sensitivity to staying more than one error away from an event of consequence. When the situation demands being one barrier away from an event of consequence, reinforce the importance of minimizing the time spent in the condition.

SUPERVISORS

Supervisors communicate the importance of safety culture.

- Communicate and teach desired nuclear safety behaviors to their work groups, including supplemental personnel. Share examples of how individuals can positively and negatively affect nuclear safety, and verify that the intended messages were actually heard and understood.
- Promote a safety-conscious work environment by providing opportunities for open discussion of nuclear safety within their work groups and by encouraging identification and reporting of perceived unsafe behavior and unsafe conditions. Follow up and provide feedback on actions taken.
- Promote effective prejob briefings.
- Ask, "What is the most likely undesired consequence of this action?" in order to validate appropriate contingency actions and to ensure operational and nuclear safety impacts are appropriately identified prior to work.
- Participate in and assign employees to corrective action program evaluations, self-assessments, benchmarking, training, and oversight organizations to help identify performance issues and provide input to solutions.
- Participate in sitewide self-assessments and surveys by offering accurate, candid, and thoughtful input to help managers determine the health of the station's safety culture.

Supervisors demonstrate safety culture behaviors.

- Take ownership for the preparation and flawless execution of their work groups' activities. Seek out relevant operating experience and obtain appropriate approvals before starting work. Verify that assigned individuals are fit and qualified to perform activities.
- Know the status of the plant, the nuclear safety risks associated with assigned jobs, and other parallel station activities. Do not allow work on protected safety trains, systems, and components being used to maintain safety system defense-in-depth.
- Attend and conduct training on safety culture, including a safety-conscious work environment, and communicate the appropriate behaviors to maintain a healthy safety culture.
- Maintain high standards of personal conduct and communication that promote teamwork, continuous improvement, and a questioning attitude.
- Hold themselves personally accountable for modeling nuclear safety behaviors, including standards for procedure use, the use of error reduction tools, and stopping when unsure or when conditions are not as expected.

— Obtain the training necessary to understand plant operation, including safety systems designed to maintain critical safety functions.

— Actively monitor their work groups for potential distractions that adversely affect nuclear safety and operational focus during periods of major change.

Supervisors challenge others in the area of safety culture.

— Review procedures and instructions prior to work to validate that they are appropriate for the scope of work and that required changes are completed prior to beginning work.

— Ensure workers and supplemental personnel fully understand the impact on nuclear safety, defense-in-depth, potential error traps, the scope of work, critical steps, applicable error reduction tools, termination criteria, and required notifications prior to beginning work.

— Ensure assigned supplemental personnel understand expected work behaviors and required actions associated with their jobs to maintain nuclear safety and defense-in-depth.

— Visit job sites to validate that standards and expectations are being followed.

— Question station decision-makers to fully understand the bases of operational and management decisions that appear to be contrary to nuclear safety.

— Look for and eliminate organizational and system-induced contributors to events and station weaknesses. Seek to understand the basis for worker decisions that contributed to such events.

Supervisors motivate others to perform safety culture behaviors.

— Consistently reinforce nuclear safety as the overriding priority; and use actual examples, applicable to their work groups, to exemplify the desired behaviors.

— Publicly praise behaviors of direct reports that reflect a strong safety culture, and reward individuals who report safety concerns or stop operations for safety reasons.

— Reinforce the performance of job-site reviews to identify and correct conditions that could impede the safe completion of the assigned task or the safe operation of the plant.

— Reinforce to workers to take the time to do the job right the first time, seek advice when unsure, and stop if plant conditions are not as expected. Handle emergent or unscheduled work with extreme caution.

— Ensure workers report concerns, problems, degraded conditions, and near misses using the corrective action program.

— Provide candid feedback to people and groups that are not demonstrating high standards.

— Reinforce personal accountability for adherence to high standards and expected behaviors, and actively correct undesired behaviors and reinforce the desired behaviors. Be sensitive to the negative impact of intimidation or personal attacks on trust and maintenance of a safety-conscious work environment.

— Use demonstrated nuclear safety behaviors as a criterion for performance appraisals and selecting subordinates.

— Reinforce the management of defenses and sensitivity to staying more than one error away from an event of consequence. When the situation demands being one barrier away from an event, reinforce the importance of minimizing the time spent in the condition.

INDIVIDUAL CONTRIBUTORS

Individual contributors communicate the importance of safety culture.

- Communicate in a manner that encourages teamwork and the creation of a positive work environment.
- Participate in sitewide self-assessments and surveys by offering accurate, candid, and thoughtful input to help managers determine the health of the station safety culture.
- Participate in corrective action program evaluations, self-assessments, benchmarking, training, and oversight organizations to help identify performance issues and provide input to solutions.

Individual contributors demonstrate safety culture behaviors.

- Take ownership for the preparation and flawless execution of assigned work activities. Seek out relevant operating experience and obtain appropriate approvals before starting work. Perform only independent activities for which they are fully qualified.
- Actively participate in prejob briefings. Fully understand the impact on nuclear safety, defense-in-depth, potential error traps, the scope of work, critical steps, priority error reduction tools, termination criteria, and required notifications to the control room and supervision associated with the assigned activity.
- Perform a review of the work site to identify and correct job-site conditions that are not as expected or that potentially impact the safe completion of the assigned task.
- Take the time to do the job right the first time and seek advice when unsure. Stop if plant conditions are not as expected. Handle emergent or unscheduled work with extreme caution.
- Hold themselves personally accountable for modeling nuclear safety behaviors, including the standards for procedure use, the use of error reduction tools, and stopping when unsure or when conditions are not as expected.
- Obtain the training necessary to understand plant operation, including safety systems designed to maintain critical safety functions.
- Stay more than one error away from an event of consequence. When the situation demands being one barrier away from an event of consequence, minimize the time spent in the condition.
- Avoid being distracted from completing assigned tasks successfully during periods of major change. Identify potential distractions and report unexpected issues that adversely affect safety.

Individual contributors challenge others in the area of safety culture.

- Review procedures and instructions prior to work to validate that they are appropriate for the scope of work and that required changes are completed prior to beginning work.
- Ask, "What is the most likely undesired consequence of this action?" to validate appropriate contingency actions and to ensure operational and nuclear safety impacts are appropriately identified prior to beginning work.
- Know the status of the plant, the nuclear safety risks associated with assigned jobs, and other parallel station activities. Do not work on protected safety trains, systems, or components being used to maintain safety system defense-in-depth. Question if assigned to work on equipment that is protected.
- Question station decision-makers to fully understand the bases of operational and management decisions that appear to be contrary to nuclear safety.
- Manipulate plant equipment only when appropriately authorized and directed by approved plant procedures or work instructions.

Individual contributors motivate others to perform safety culture behaviors.

- Promptly report concerns, problems, degraded conditions, and near misses to supervision, and document them in the corrective action program. For issues that affect nuclear safety, use the employee concern process if line management is not addressing the concern satisfactorily.
- Actively solicit and be open to performance feedback.
- Encourage coworkers to adhere to high standards and to be open to performance feedback.
- Help supplemental personnel understand expected work behaviors and required actions associated with their jobs necessary to maintain nuclear safety and defense-in-depth.

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