

TRAIT TALK

Issue 2

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Trait Talk was developed to provide you with a better understanding of the nine safety culture traits found in the U.S. Nuclear Regulatory Commission's (NRC) Safety Culture Policy Statement (SCPS) and how they apply to you—whether you are an NRC employee interacting with an external stakeholder, an NRC licensee, a vendor or contractor employee, an organization interested in the safe and secure use of nuclear materials, or others involved in nuclear safety regulation. Please see page 4 of Safety Culture Trait Talk for more information on the SCPS.

Experience has shown that certain personal and organizational traits are present in a positive safety culture. A trait, in this case, is a pattern of thinking, feeling, and behaving that emphasizes safety, particularly in goal conflict situations, for example, in situations where production, schedule, or just the cost of effort may conflict with doing the job safely. The NRC identified nine traits of a positive safety culture in the SCPS, although the agency recognizes that additional traits may also be important. In addition, please note that the traits were not developed to be used for inspection purposes.

Each Trait Talk includes a fictional scenario based on a different licensee or community. The scenario used in this Trait Talk is based on the materials community.

As you read through *Trait Talk*, consider the following questions:

1. How does this trait apply to my organization?
2. Are there other attributes and examples that better fit my organization?
3. What impact does this trait have on the safety culture in my organization?
4. How does this increase my understanding of the safety culture in my organization?
5. How could I improve the performance of this trait in my organization?

Work Processes

One of the traits of a positive safety culture as described in the U.S. Nuclear Regulatory Commission's Safety Culture Policy Statement.

What Is The Definition Of Work Processes?

The NRC's SCPS defines Work Processes as when the process of planning and controlling work activities is implemented so that safety is maintained.

Why Is This Trait Important?

The process of designing and controlling work to ensure safety is an important part of an organization, and how effectively an organization manages and implements their work processes is a reflection of their safety culture. For example, effective work processes in a positive safety culture will have a well-designed workflow that includes the assignment of responsibilities to leaders, work groups, and individuals. Work activities will be prioritized, coordinated across workgroups, and communicated effectively. Policies and procedures will incorporate the appropriate risk insights and be effectively planned, executed, verified, and documented. The rigorous development, management and adherence to work processes helps ensure the safe use of nuclear materials and reflects a positive safety culture.

Many organizations operating high-risk technologies (such as in industries using nuclear materials) employ collaborative decisionmaking, develop detailed procedures, and require verification of steps during procedure implementation under normal operations. The development and implementation of emergency operating procedures is equally as rigorous. Other high reliability organizations, however, may base activities around individual expertise and professionalism, autonomy, and rapid team-based response, particularly during off-normal conditions. Both perspectives can be important for the design and implementation of work processes. For example, organizations may require strict adherence to normal and emergency operating procedures. However, flexibility may be necessary when responding to off-normal conditions.

The need for procedural compliance during normal or emergency operations and the allowance for flexibility and individual autonomy during periods of off-normal conditions pose a dilemma for many organizations. One of the biggest management challenges may be how to realize the benefits of both approaches given that these two perspectives on controlling work processes can create internal inconsistencies.

SAFETY CULTURE TRAIT TALK

WHAT DOES THIS TRAIT LOOK LIKE?

Work Management: The organization implements a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. The work process includes the identification and management of risk commensurate to the work.

Work is effectively planned and executed by incorporating risk insights, job-site conditions, and the need for coordination with different groups or job activities. The work process appropriately prioritizes work and incorporates contingency plans, compensatory actions, and abort criteria as needed. Leaders consider the impact of changes to the work scope and the need to keep personnel apprised of the work status. The work process ensures individuals are aware of the nuclear safety risks associated with work in the field, and other parallel station activities. Insights from probabilistic risk assessments are considered in daily work activities and change processes. Work activities are coordinated to address conflicting or changing priorities across the whole spectrum of activities contributing to nuclear safety. The work process limits temporary modifications.

Design Margins: The organization operates and maintains equipment within design margins. Margins are carefully guarded and changed only through a systematic and rigorous process. Special attention is placed on maintaining fission product barriers, defense-in-depth, and safety-related equipment.

The work process supports nuclear safety and the maintenance of design margins by minimizing long-standing equipment issues, preventive maintenance deferrals, and maintenance and engineering backlogs. The work process ensures focus on maintaining fission product barriers, defense-in-depth, and safety-related equipment. Design and operating margins are carefully guarded and changed only with great thought and care. Safety-related equipment is operated and maintained well within design requirements.

Documentation: The organization creates and maintains complete, accurate, and up-to-date documentation.

Activities are governed by comprehensive, high-quality programs, processes, and procedures. Design documentation, procedures, and work packages are complete, thorough, accurate, and current. Components are labeled clearly, consistently, and accurately. The backlog of document changes is understood, prioritized, and actively managed to ensure quality.

Procedure Adherence: Individuals follow processes, procedures, and work instructions.

Individuals follow procedures. Individuals understand and use human error reduction techniques. Individuals 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 implementation. Individuals manipulate equipment only when appropriately authorized and directed by approved procedures or work instructions. Individuals ensure that the status of work activities is properly documented.



WHAT IS A SCENARIO IN WHICH THIS TRAIT COULD PLAY A ROLE?

Two radiographers were performing nondestructive testing operations of pipe welds at a temporary job site using a 2.4 TBq (65 Ci) iridium -192 radioactive source in a radiography camera. In between shots, the first radiographer briefly entered the restricted area without conducting a radiation survey. Upon exiting the restricted area, he noticed that a piece of equipment had fallen onto the guide tube, putting a crimp in the tube. After the next shot, without conducting a radiation survey, both radiographers entered the restricted area to set up for the next operation thinking that the source had been properly retracted into the shielded position. However, the crimp in the guide tube from the fallen equipment prevented the source from retracting back to the shielded position. The second radiographer's ratemeter sounded an alarm indicating that radiation exposures greater than the preset amount were being exceeded, while the first radiographer's ratemeter did not alarm. Because the first radiographer's ratemeter did not alarm, they both assumed that the second radiographer's ratemeter was not functioning properly. They continued operations and did not notify the radiation safety officer of the incident. The radiation safety officer became aware of the incident when he identified an overexposure of both workers from the personnel dosimetry reports that he received a few weeks later.

There is a high potential dose hazard associated with industrial radiographic operations. The process of planning and controlling work activities so that safety is maintained (work processes) was lacking in this scenario. Although the regulations require it, the radiographers did not conduct a radiation survey to ensure that the source was properly retracted into the shielded position in the camera. The radiographers failed to investigate the discrepancy between the two ratemeters. Also, the radiographers did not properly follow procedures for notification of the radiation safety officer of the incident or the potential overexposure because they believed that the ratemeter that sounded was faulty.

Thinking about the scenario discussed above, consider the following questions:

1. How does this scenario apply to the safety culture trait of Work Processes?
2. What kinds of actions and behaviors would have reinforced safety as the overriding priority?
3. How could management have handled this situation differently?

WHO CAN I CONTACT WITH A QUESTION OR SUGGESTION?

The NRC looks forward to continuing to provide you with information about the traits of a positive safety culture. If you have a question or would like to make a suggestion, please contact the U.S. Nuclear Regulatory Commission, Office of Enforcement, Safety Culture Team, at external_safety_culture_resource@nrc.gov.



Sources of Information:

- 1 "Why is this trait important?" was derived, in part, from a literature review (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13023A054) prepared by Pacific Northwest National Laboratories for the NRC Office of Nuclear Regulatory Research.
- 2 "What does this trait look like?" was derived from the Safety Culture Common Language effort (ADAMS Accession No. ML13031A343), under the direction of the Office of Nuclear Reactor Regulation. Panelists from the NRC, nuclear power industry, and the public created attributes of a positive nuclear safety culture, and examples of each attribute that a nuclear power organization should demonstrate in maintaining a positive safety culture. Although these attributes and examples were created specifically for the reactor community, they may also be applicable to various other communities and organizations. For purposes of Trait Talk, the examples were partially rewritten to increase applicability to nuclear as well as non nuclear communities.
- 3 "What is a scenario in which this trait played a role?" was developed specifically for Safety Culture Trait Talk for educational purposes only. The scenario is fictional and any resemblance to actual events, people, or organizations is purely coincidental.

SAFETY CULTURE TRAIT TALK

WHAT IS THE NRC'S SAFETY CULTURE POLICY STATEMENT?

There are many definitions of safety culture. Most of these definitions focus on the idea that in a positive safety culture individuals and organizations emphasize safety over competing goals, such as production or costs, ensuring a safety-first focus. The NRC's SCPS defines nuclear safety culture as *the core values and behaviors resulting from a collective commitment by leaders and individuals to emphasize safety over competing goals to ensure protection of people and the environment.* Experience has shown that certain personal and organizational traits are present in a positive safety culture. The following traits were included in the NRC's SCPS, although additional traits may also be important in a positive safety culture:

Leadership Safety Values and Actions	Problem Identification and Resolution	Personal Accountability
<i>Leaders demonstrate a commitment to safety in their decisions and behaviors.</i>	<i>Issues potentially impacting safety are promptly identified, fully evaluated, and promptly addressed and corrected commensurate with their significance.</i>	<i>All individuals take personal responsibility for safety.</i>
Work Processes	Continuous Learning	Environment for Raising Concerns
<i>The process of planning and controlling work activities is implemented so that safety is maintained.</i>	<i>Opportunities to learn about ways to ensure safety are sought out and implemented.</i>	<i>A safety conscious work environment is maintained where personnel feel free to raise safety concerns without fear of retaliation, intimidation, harassment or discrimination.</i>
Effective Safety Communications	Respectful Work Environment	Questioning Attitude
<i>Communications maintain a focus on safety.</i>	<i>Trust and respect permeate the organization.</i>	<i>Individuals avoid complacency and continually challenge existing conditions and activities in order to identify discrepancies that might result in error or inappropriate action.</i>

The NRC's SCPS provides the NRC's expectation that individuals and organizations performing regulated activities establish and maintain a positive safety culture commensurate with the safety and security significance of their activities and the nature and complexity of their organizations and functions. Because safety and security are the primary pillars of the NRC's regulatory mission, consideration of both safety and security issues, commensurate with their significance, is an underlying principle of the SCPS.

The NRC's SCPS applies to all licensees, certificate holders, permit holders, authorization holders, holders of quality assurance program approvals, vendors and suppliers of safety-related components, and applicants for a license, certificate permit, authorization, or quality assurance program approval subject to NRC authority. In addition,

the Commission encourages the Agreement States (States that assume regulatory authority over their own use of certain nuclear materials), their licensees, and other organizations interested in nuclear safety to support the development and maintenance of a positive safety culture within their regulated communities. The SCPS is not a regulation; therefore, it is the organization's responsibility, as part of its safety culture program, to consider how to apply the SCPS to its regulated activities.

The NRC's SCPS, which includes the definition of nuclear safety culture and the nine traits of a positive safety culture, can be found on the NRC's Safety Culture Web site. The Web site includes additional safety culture information, as well as the NRC safety culture case studies, which describe how the presence or absence of safety culture traits affects the outcome of the events.