

Overview of the Development of the Safety Culture Characteristics

The proposed U.S. Nuclear Regulatory Commission (NRC) agency-wide safety culture characteristics retain the concepts of the Reactor Oversight Process (ROP) safety culture components but were revised to be generically applicable; include explicit reference to security concerns; streamlined; and clarify the wording used to describe some of the concepts. Further discussion of the changes follows.

Applicability. Because the 13 safety culture components were tailored for use in the ROP, some of the terminology used in the ROP component descriptions is not applicable to the other, non-reactor organizations and processes the NRC also regulates. For example, one ROP component refers to the licensee's "corrective action program" because power reactor licensees in the U.S. have established sophisticated, formal processes and programs for identifying, evaluating and resolving nuclear safety issues. By contrast, a small industrial radiography firm typically would not have the resources to establish a formal program. However, the overarching principle, which is that an organization with a healthy safety culture identifies, evaluates and resolves safety and security problems, applies to large power reactors and small firms as well. Therefore, the agency-wide safety culture characteristics refer to identifying, evaluating and resolving problems affecting safety and security but do not use the term "corrective action program." Instead, the agency-wide safety culture characteristics include a Problem Identification and Evaluation characteristic and a Problem Resolution characteristic.

Security. For consistency with the NRC's mission and increased focus on the safety/security interface, each of the safety culture characteristics refers to "safety and security" where only "safety" was previously mentioned. For example, the ROP Continuous Learning Environment component is described as "the licensee ensures that a learning environment exists." The related agency-wide safety culture characteristic is described as "management maintains a continuous learning environment in which opportunities to improve safety and security are sought out and implemented." The unique aspects of security would be addressed, as appropriate within the examples or aspects for each characteristic.

Streamlined. In accordance with Inspection Manual Chapter 0305, the ROP inspection staff uses nine of the 13 safety culture components when implementing the baseline inspection program. Four of the components are "reserved" for use only during supplemental inspections when a licensee's performance has declined. When the staff had the opportunity to consider the four reserved components in inspection activities, it appeared that some of them were redundant with the safety culture concepts captured in the nine baseline components and their associated aspects. For example, the staff noted that the extent to which a licensee implements improvements that are identified through Operating Experience (OpE) reviews or Self- and Independent Assessments (OpE and assessments are two of the nine baseline ROP components) is an indication of the extent to which the licensee is maintaining a Continuous Learning Environment (one of the reserved components). Alternatively, if a licensee identifies problems or weaknesses from OpE reviews or assessments and resolves them, then the use of OpE and assessments can be viewed as indicating that the licensee's processes for identifying and resolving problems are effective (the ROP Corrective Action Program component).

Power reactor licensees and other NRC-regulated entities use a variety of means to identify problems as well as opportunities for improvement. The overarching safety culture concepts are that the licensee identifies problems and resolves them and seeks out and implements opportunities for improvement no matter what means are used to achieve these ends. Therefore, the agency-wide set of safety culture characteristics does not include OpE and

Self- and Independent Assessments as separate characteristics, although they continue to be meaningful examples (aspects) of a strong safety culture in nuclear power plants. Similar considerations led to the elimination of Safety Policies and Organizational Change Management as safety culture characteristics in the revised set.

Clarified. The staff noted that the wording of some of the ROP components could be improved to more fully or accurately communicate the overarching concept. For example, the work practices component is described as “personnel work practices support human performance,” which does not fully capture the intended scope of this component. Although using human performance enhancing tools, such as self- and peer-checking, following procedures and holding pre-job briefs, provide evidence of a healthy safety culture, there are additional attitudes and behaviors at the individual contributor level that provide equally diagnostic information about the strength of the organization’s safety culture. These may include not only following procedures but also taking responsibility to ensure that an error found in a procedure is corrected; not only re-checking one’s calculations when performing an engineering analysis but also questioning one’s underlying assumptions and the data on which the analysis is based; or not only wearing one’s personal protective equipment but also insisting that co-workers also protect themselves. Therefore, to more accurately capture the intended broader scope of these safety culture-related attitudes and behaviors, the description of the ROP work practices component was rewritten as the following safety culture characteristic: “As individual contributors, personnel demonstrate ownership for safety and security in their day-to-day work activities.”

Changes from the 13 ROP Safety Culture Components to the 9 draft Policy Statement Safety Culture Characteristics

ROP Safety Culture Components	Proposed Safety Culture Characteristics	Comments
Decision-Making - Licensee decisions demonstrate that nuclear safety is an overriding priority.	Licensee Decision-Making – Licensee decisions ensure that safety and security are maintained.	Re-named to clarify that the decisions to which the new characteristic refers are decisions at the organizational level, rather than the day-to-day decisions made by individuals, for example, on the shop floor. Decision-making in day-to-day work activities would be an aspect of the Work Practices characteristic. Deleted “nuclear safety is an overriding priority” because that is the basic definition of a healthy safety culture, so the phrase is too broad. In addition, the ROP component description does not address security. Replaced with “ensure that safety and security are maintained” to describe the desired outcomes of licensee decisions.
Resources – The licensee ensures that personnel, equipment, procedures, and other resources are available and adequate to assure nuclear safety.	Resources – The licensee ensures that the personnel, equipment, procedures, and other resources needed to assure safety and security are available.	Minor revision to eliminate “adequate” and replace it with “resources needed to assure...” for clarity. Added reference to resources needed to maintain security.
Work Control - The licensee plans and coordinates work activities, consistent with nuclear safety.	Work Planning and Control – Processes for planning and controlling work ensure that individual contributors, supervisors and work groups communicate, coordinate, and execute their work activities in a manner that supports safety and security.	Expanded to clarify that the focus of the characteristic is on the interactions between individuals and work groups that are necessary to ensure that work is planned, coordinated and completed as intended. Added reference to security.
Work Practices - Personnel work practices support human performance.	Work Practices – As individual contributors, personnel demonstrate ownership for safety and security in their day-to-day work activities.	Revised to clarify that this characteristic refers to the attitudes (“safety and security are everyone’s responsibility”) and behaviors (which may include, but are not limited to, the use of human performance tools) of individuals in their day-to-day work activities. Added reference to security.
Corrective Action Program - The licensee ensures that issues potentially impacting nuclear	Problem Identification and Evaluation – Management ensures that issues potentially	Eliminated reference to the CAP because not all NRC-regulated entities have formal corrective action programs. Divided the component into two to clarify that problem identification/evaluation and resolution are distinct

ROP Safety Culture Components	Proposed Safety Culture Characteristics	Comments
safety are promptly identified, fully evaluated, and that actions are taken to address safety issues in a timely manner, commensurate with their significance.	<p>impacting safety or security are promptly identified and fully evaluated, commensurate with their significance.</p> <p>Problem Resolution – The licensee ensures that safety and security issues are promptly addressed and corrected, commensurate with their significance.</p>	organizational behaviors. Combined problem identification with problem evaluation because evaluation is typically required to ensure the full extent/nature of a problem or issue is identified. Added reference to security to both characteristics.
Operating experience - The licensee uses operating experience (OE) information, including vendor recommendations and internally generated lessons learned, to support plant safety.		Not retained as a separate characteristic. The review and use of operating experience and internally generated lessons learned can result in the identification of problems and issues as well as opportunities for organizational improvement. Depending on how it is applied, the use of OE can be viewed as an aspect (specific example) of either the problem identification/evaluation characteristic or the continuous learning environment characteristic. Further, the availability of OE and/or the resources necessary to collect, review and apply it vary among NRC-regulated entities, so this component would not be generically applicable, particularly as written (i.e., “plant safety”). Therefore, this concept is retained as an aspect of other safety culture characteristics, where applicable.
Self- and Independent Assessments - The licensee conducts self- and independent assessments of their activities and practices, as appropriate, to assess performance and identify areas for improvement.		Not retained as a separate characteristic. As discussed with respect to the OE component, self- and independent assessments are a means to identify problems and opportunities for improvement. As also discussed with respect to OE, not all NRC-regulated entities have the ability or resources to conduct or sponsor self- and independent assessments. Therefore, this concept also would no longer be a separate component, but could be used by a program office as an aspect of another characteristic, where applicable.

ROP Safety Culture Components	Proposed Safety Culture Characteristics	Comments
<p>Environment for Raising Concerns - An environment exists in which employees feel free to raise concerns both to their management and/or the NRC without fear of retaliation and employees are encouraged to raise such concerns.</p> <p>Preventing, Detecting, and Mitigating Perceptions of Retaliation - A policy for prohibiting harassment and retaliation for raising nuclear safety concerns exists and is consistently enforced.</p>	<p>SCWE – Management maintains a work environment in which personnel feel free to raise concerns without fear of retaliation.</p>	<p>Combined the two ROP components into a single characteristic and renamed it “Safety Conscious Work Environment” for broader applicability and simplicity. Included reference to management’s responsibility for creating and maintaining an open environment for greater consistency with the Commission’s policy statement [insert cite here]. The applicable portions of the two ROP components would be retained as aspects of this characteristic and tailored to the specific processes and organizational environments of non-reactor regulated entities.</p>
<p>Accountability - Management defines the line of authority and responsibility for nuclear safety.</p>	<p>Accountability – Roles, responsibilities and authorities for safety and security are clearly defined and reinforced.</p>	<p>Removed the concept of a “line of authority and responsibility” because it may not apply to some NRC-regulated entities. Added reference to security.</p>
<p>Continuous Learning Environment - The licensee ensures that a learning environment exists.</p>	<p>Continuous Learning Environment – Management maintains a continuous learning environment in which opportunities to improve safety and security are sought out and implemented.</p>	<p>Expanded the description for greater clarity. Added reference to security.</p>
<p>Organizational Change Management - Management uses a systematic process for planning, coordinating, and evaluating the safety impacts of decisions related to major changes in organizational structures and functions,</p>		<p>Not retained as a separate characteristic because it is not generically applicable to all NRC-regulated entities, particularly smaller activities. Where applicable, it would be retained as an aspect of the Licensee Decision-Making characteristic.</p>

ROP Safety Culture Components	Proposed Safety Culture Characteristics	Comments
<p>leadership, policies, programs, procedures, and resources. Management effectively communicates such changes to affected personnel.</p>		
<p>Safety Policies - Safety policies and related training establish and reinforce that nuclear safety is an overriding priority.</p>		<p>Not retained as a separate characteristic because it is redundant with concepts already included in the other characteristics and may not be generically applicable.</p>