The FR/SSO Guide to Safety Culture

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Objectives

- Review the Board's concerns about safety culture at the Waste Treatment and Immobilization Plant (WTP)
- Understand what group culture is and why it is an important part of nuclear operations
- Learn how to recognize safety culture issues before they compromise personal and facility safety

Safety Culture at WTP

On June 9, 2011, the Board issued Recommendation 2011-1, *Safety Culture at the Waste Treatment and Immobilization Plant;* it was based on two key findings from an extensive investigation:

- "A chilled atmosphere adverse to safety exists" in the project's contractor and Federal staff; based on reviews of allegations of suppression and retaliation, and supported by worker interviews
- "DOE and contractor management suppress technical dissent," based on evidence of withheld information, pressuring experts to change opinions, and failing to act on identified safety concerns

DOE's Response

Since the Recommendation was issued, DOE has conducted multiple assessments at the project; the most authoritative assessment was the Office of Health, Safety and Security's review, issued in January 2012

What did the HSS team conclude?

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Why did they reach those conclusions?

Why Study Safety Culture?

•Safety Culture is an important part of establishing and maintaining a safe nuclear operation; however, it is not easy to recognize cultural problems

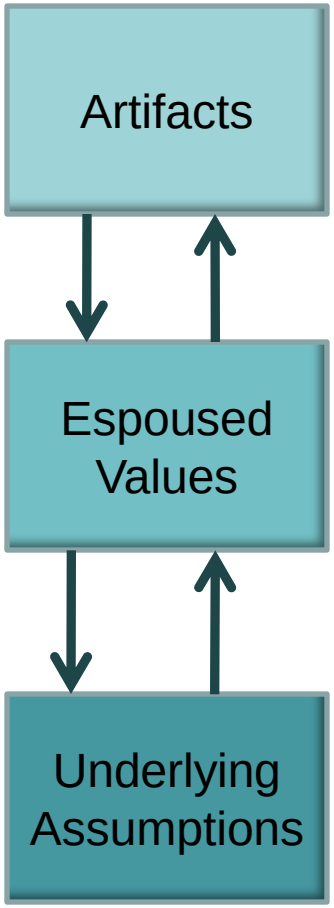
What is Culture?

"The only thing of real importance that leaders do is to create and manage culture…"

– Edgar Schein

- Group culture is the shared basic assumptions developed by a group as it learns and copes with problems
- Assumptions that are considered valid are taught to new members as the way to perceive, think, act, and feel
- Culture is the sum total of the group's learning; as such it defines how a group will respond to any situation
- "Culture is for the group what character and personality are for the individual" (INPO)

The Three Levels of Culture



(E. Schein)

Typical Artifacts:
- Turnover rates in safety-related positions.
- Types of accomplishments being recognized and rewarded.
- Division of resources between functional areas.
- Response to a 'stop work' order or differing opinion.

Typical Espoused Values:
- "We value and reward team work."
- "Safety and security are our highest priorities."
- "Everybody at the plant has 'stop work' authority."
- "Our workers are always trained to the highest standards."

Typical Underlying Assumptions:
- "We know the job better than anybody."
- "I'd never do anything that would hurt me or my buddies."
- "We need to get the job done so that we'll get paid."
- "My bosses will keep me out of trouble."

Pattern of Declining Safety

1. ***Over-confidence.*** A result of good past performance and unjustified self-satisfaction
2. ***Complacency***. Minor events begin to occur but are not adequately assessed; oversight begins to be weakened due to self-satisfaction
3. ***Denial***. More significant events begin to occur; negative oversight findings tend to be rejected as invalid; corrective actions not systematically carried out, improvement programs not completed
4. ***Danger***. A few potentially severe events occur; organization consistently rejects criticisms; oversight afraid to confront management
5. ***Collapse***. Problems become clear for all to see; management is overwhelmed and usually needs to be replaced

Source: IAEA, INSAG-13

Pattern of Declining Safety (con't)

Plants with significant problems:

- Failed to recognize declining performance
- Did not effectively monitor and trend performance
- Experienced increasing human error rates
- Lacked awareness among top managers about principal deficiencies and corrective actions
- Did not use operational experience feedback effectively
- Did not conduct adequate or sufficient self-assessments
- Failed to effectively supervise and monitor subcontractors

Source: IAEA, INSAG-13

What to Look For

- The most difficult part of assessing a culture's impact on safety performance is recognizing detrimental behaviors
- Unfortunately, there is no reference book or guide; each culture is unique to its context
- However, a variety of sources can be useful in learning what to look for, such as
  - Investigations of major accidents
  - Books on leadership and management
  - Case studies on group culture
- A detailed assessment is very difficult, but there are ways to gain basic insights into a group's culture

"We know what works"

- There is a natural tendency to rely on prior experience as an predictor of future performance
- This attitude can lead to
  - A lack of management oversight and accountability
  - Accepting procedural violations and work-arounds
  - A lack of management awareness of principle deficiencies and corrective actions
  - An emerging "good news" culture
  - Event significance is unrecognized or underplayed
  - Devaluing of training and qualification programs

"We are the experts"

- There is no question that the group conducting an operation is the group most knowledgeable about it
- This belief can lead to
  - Discounting the significance of requirements
  - Relying on an informal network of "trusted experts"
  - Justifying inadequate procedures and training
  - Failing to benchmark against others
  - Accepting deviations without formal evaluation
  - Redefining acceptance criteria to avoid or defer operational impact from corrective actions

"Is THAT a requirement?"

- Individuals constantly make trade-offs between doing work quickly or thoroughly; the decision often is based on the individual's perception of the degree of risk
- Examples of such trade-offs are
  - Placing budget or schedule ahead of safety
  - Taking shortcuts on procedures
  - Not taking a systematic approach
  - Symptom-based problem solving
  - Accepting poor plant condition or housekeeping
  - Using procedures as training aids but not on the job

“An accident rooted in history”

"Not on my watch"

- As success grows, groups tend to perceive themselves as immune to the weaknesses they see in others
- This perception can lead to
  - Rejecting lessons learned from other groups
  - Underplaying significance of precursor events
  - Addressing symptoms but failing to determine root causes of problems
  - Inadequately preparing for emergency response
  - Failing to pursue or complete facility or programmatic improvement plans
  - Blind faith in capability of engineered systems

"Faster, better, cheaper"

- The leaders set the goals and priorities for a group; when some of those goals conflict with others, the leaders must make adjustments
- Unresolved goal conflicts may lead to
  - Excessive focus on short-term production goals
  - Unpredictable decision-making patterns
  - Accumulating unrecognized residual risk
  - Resource mismatches between operations and safety
  - Insufficient schedule margin for unforeseen problems
  - Excessive stress on staff

"Distracted driving"

- Culture defines a group's response to its environment; when external influences change that environment, the culture may yield unpredictable decisions
- Serious external pressures may result in
  - Lack of concern and awareness of safety issues
  - Distracting managers from visible commitment to safety culture
  - Organizational changes without consideration for potential effects on safety
  - Neglecting essential staff considerations
  - Assigning multiple safety roles to individuals

"Prove it is unsafe"

- People want certainty, safety is based on uncertainty; as success grows, the uncertainty appears to shrink
- This perception can lead to
  - Lack of sensitivity to "nuclear" safety
  - Neglecting to consider assumptions in evaluations
  - Reliance on past success as a substitute for sound engineering practices
  - Ineffective tracking and trending of performance
  - Insufficient verification of operational readiness
  - Safety groups that are isolated and ineffective

“Our luck ran out”

Conclusions

- Group culture has a very large impact on safe operations
- Simply put, a culture that reflects safety as the group's highest priority is referred to as a "safety culture"
- Accurately assessing a group's safety culture is difficult but there are experts and techniques available
- There are characteristic patterns that anyone can watch for to gain insight into a group's culture

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BACKUP SLIDES

"They do not understand"

- Groups tend to resist externally-driven change, arguing that their situation is unique
- This resistance can lead to
  - Discrediting the competency of outsiders and rejecting their advice and observations
  - Ostracizing group members who express safety concerns or dissenting technical opinions
  - Questioning the applicability of requirements
  - Devaluing consensus standards and practices
  - Hostility towards outsiders and senior managers
  - Isolationism