



Safety Culture Workshop

**Region IV RUG Meeting
September 13, 2006**

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Workshop Purpose

- 1) Opportunity for staff to present information about the recent changes to the ROP related to safety culture initiative
- 2) To have an interactive discussion about how the recent ROP changes will affect licensees

Davis-Besse

- Root cause included elements of safety culture
- Nuclear safety focus
- Implementation of Corrective Action Program
- Analysis of safety implications
- Procedure compliance

Commission Direction Based on Davis-Besse

- Commission direction in the form of staff requirements memoranda, included:
 - Enhance the Reactor Oversight Process (ROP) treatment of cross-cutting issues to more fully address Safety Culture;
 - Ensure inspectors are properly trained;
 - Develop a process for determining the need for a specific safety culture evaluation of plants in a degraded cornerstone; and
 - **Ensure modifications to the ROP are consistent with the ROP development principles**

NRC Safety Culture Definition

“Safety Culture is that assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance.”*

* Adopted from the IAEA’s International Nuclear Safety Advisory Group (INSAG) as presented in INSAG-4 publication

Safety Culture vs. Safety Conscious Work Environment

SCWE = An environment in which employees are encouraged to raise safety concerns, are free to raise concerns both to their own management and to the NRC without fear of retaliation, where concerns are promptly reviewed, given the proper priority, and appropriately resolved, and timely feedback is provided to those raising concerns.

Ongoing Staff Activities

- Formation of NRC ROP Safety Culture Focus Team
- Monthly ROP meetings with industry
- 18 Month initial implementation phase

References

- <http://www.nrc.gov/what-we-do/regulatory/enforcement/safety-culture.html>
- SECY/SRM 04-011, 05-0187, and 06-0122
- RIS 2006-13



Safety Culture Components

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Development of the NRC's Safety Culture Components

- Goal: identify what is important to safety culture
- Information compiled from industry and international sources
- Applied experience of working group
- Information screened/ revised to ensure:
 - Is within NRC's regulatory jurisdiction
 - Is readily available or applicable to most licensees
 - Is indicative of safety culture
 - Is unambiguous

Development of the NRC's Safety Culture Components - continued

- Information consolidated and grouped to become 13 safety culture components
 - 9 related to the cross-cutting areas and became cross-cutting area components
- Information under each component put into context of being used in assessing inspection findings
- Extensive stakeholder input solicited throughout development process

Cross-Cutting Area Components

A component of safety culture that is directly related to one of the cross-cutting areas which remain:

- Human Performance, Problem Identification and Resolution (PI&R), and Safety Conscious Work Environment (SCWE)

The Human Performance cross-cutting components are:

- Decision-Making
- Resources
- Work Control
- Work Practices

Cross-Cutting Area Components - continued

The PI and R cross-cutting components are:

- Corrective Action Program
- Operating Experience
- Self and Independent Assessments

The SCWE cross-cutting components are:

- Environment for Raising Concerns
- Preventing, Detecting, and Mitigating Perceptions of Retaliation

IMC0305 Bins vs Components

Cross-cutting Area	Previous: Bins	New: Components
PI&R	<ul style="list-style-type: none"> - Identification - Evaluation - Corrective Action 	<ul style="list-style-type: none"> - Corrective Action Program - Assessments - Operating Experience
Human Performance	<ul style="list-style-type: none"> - Personnel - Resources - Organization 	<ul style="list-style-type: none"> - Decision Making - Resources - Work Control - Work Practices
SCWE	<ul style="list-style-type: none"> - None 	<ul style="list-style-type: none"> - Environment for Raising Concerns - Preventing, Detecting, and Mitigating Perceptions of Retaliation

Other Safety Culture Components

- The components of safety culture that are not directly related to one of the cross-cutting areas
- These include:
 - Accountability
 - Continuous Learning Environment
 - Organizational Change Management
 - Safety Policies
- These components are considered in the Supplemental Inspection Program



Cross-Cutting Aspects

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**Eugene Cobey, Chief
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What is a cross-cutting aspect?

- Cross-cutting aspects are the performance characteristics that comprise the cross-cutting area components.
- The cross-cutting aspects are described in IMC 0305, “Operating Reactor Assessment Program,” Section 06.07.c.

Example

Each of the following bullets are different cross-cutting aspects of the Corrective Action Program (CAP) cross-cutting area component.

- The licensee implements a corrective action program with a low threshold for identifying issues. The licensee identifies such issues completely, accurately, and in a timely manner commensurate with their safety significance.
- The licensee periodically trends and assesses information from the CAP and other assessments in the aggregate to identify programmatic and common cause problems. The licensee communicates the results of the trending to applicable personnel.

Example (Cont.)

- The licensee thoroughly evaluates problems such that the resolutions address causes and extent of conditions, as necessary. This includes properly classifying, prioritizing, and evaluating for operability and reportability conditions adverse to quality. This also includes, for significant problems, conducting effectiveness reviews of corrective actions to ensure that the problems are resolved.
- The licensee takes actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity.
- If an alternative process (i.e., a process for raising concerns that is an alternate to the licensee's CAP or line management) for raising safety concerns exists, then it results in appropriate and timely resolution of identified problems.

How are cross-cutting aspects used in the inspection process?

- Once the inspector identifies a more than minor performance deficiency, the inspector determines the cause(s).
- If the cause(s) of the performance deficiency is related to one of the cross-cutting aspects and it is indicative of current licensee performance, then the finding is identified as having a cross-cutting aspect.
- If the performance deficiency has more than one cause, then the inspector identifies the cause that provides the most meaningful insight into the performance deficiency.
- The more than minor performance deficiency and its associated cross-cutting aspect are discussed with the licensee at the inspection exit meeting and documented in the inspection report.

Example

- More than minor performance deficiency: An equipment operator did not return a component to its proper position during a surveillance test which rendered a single train safety system non-functional.
- The inspector determines that the cause of the performance deficiency is that the operator failed to use the expected human error prevention technique of “place keeping” which resulted in a procedural step being missed.
- The inspector determines that the performance deficiency has a cross-cutting aspect because the cause aligns with one of the human performance cross-cutting aspects defined in IMC 0305, Section 06.07.c
- It is important to note that the identified cross-cutting aspect could vary depending on the cause (e.g., the operator didn't follow the procedure because it was known to be inadequate, the operator was fatigued due to excessive working hours, etc.).

What does this mean to you?

- Inspection inputs used during the assessment process to determine if a substantive cross-cutting issue exists will be known to you at the conclusion of each inspection.
- You have the opportunity to address performance trends related to a cross-cutting aspect before the NRC identifies a substantive cross-cutting issue.



Baseline Procedure Revisions: IP 71152, 71153, 93812, & 93800

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Changes to IP 71152

In Inspection Requirements and related guidance:

- inspector awareness of cross-cutting components when selecting inspection samples
- biennial inspection expanded to inspect and assess CAP, Op Ex and self assessments/audits
- review a licensee's self assessment or independent assessment of safety culture, if performed, during a biennial inspection or a quarterly sample in some cases

Changes to IP 71152 - continued

In Inspection Guidance:

- expanded documentation instructions to address all components of PI&R
- enhanced description of problems that may impact a SCWE
- replaced the SCWE questions with improved questions

Purpose of the Changes

IPs 71153, 93812, 93800

IP 71153: Observe and gather information on event significance, causes, and contributing causes including potential issues with safety culture components

IP 93812 and IP93800: Consider the components of safety culture when reviewing probable contributing causes to an event. Forward safety culture related information to a follow-up supplemental inspection leader.



Changes Made to the Supplemental Inspection Procedures (95001, 95002, 95003) and IMC 0612

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Changes to IP 95001

Enhanced to verify that the licensee appropriately considered and addressed safety culture components.

New requirement:

- Determine that the root cause evaluation, extent of condition, and extent of cause appropriately considered the safety culture components described in IMC0305.

New guidance:

- Determine whether a weakness in a SC component was a Root Cause or Significant Contributing Cause.
- If so, verify the licensee addressed that weakness through appropriate corrective actions.

Safety Culture Assessments and Licensee Performance [New]

NRC may request a licensee to conduct (or have conducted) an assessment of their safety culture performed when specific conditions are satisfied.

These conditions are associated with:

- **Recurring Substantive Cross-cutting Issues;**
- **A licensee in the Degraded Cornerstone Column of the Action Matrix AND IP95002 identifies licensee did not recognize role of safety culture component deficiencies; and**
- **A licensee in the Multiple/Repetitive Degraded Cornerstone Column of the Action Matrix.**

Changes to IP 95002 “Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area”

IMC 0305 modified to:

- Licensee evaluation expected to consider safety culture components
- NRC may request licensee to perform independent assessment of safety culture

New objective:

- Determine whether any safety culture component caused or contributed significantly to risk-significant performance issues

New requirements and guidance:

- Focused inspection to determine that the root cause evaluation appropriately considered safety culture components
- If a weakness in a safety culture component was a Root Cause or Contributing Cause to the deficiency AND the licensee’s evaluation did not recognize that cause or contribution, then the NRC may request that the licensee complete an “independent” assessment of safety culture

Changes to IP 95003, “Supplemental Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs, Or One Red Input”

Related IMC0305 changes:

- Before the NRC begins this inspection, the licensee has completed ... an independent assessment of their safety culture.
- Enable inspectors to review licensee’s safety culture assessment
- Enable inspectors to independently assess licensee’s safety culture

IP95003

Will provide requirements and guidance to carry-out the evaluation of the licensee's assessment and to perform the NRC’s assessment

Changes to IMC0612

- For every finding that has a cross-cutting aspect the reasons are documented why that cross-cutting aspect is associated with the finding, using language that parallels the descriptions of the cross-cutting area components in IMC-0305
- "This finding had a cross-cutting aspect in the area of _____ because _____" (Use words and phrases from the cross-cutting aspect text.)
- Appendix F examples show how to identify cross-cutting aspects.

Findings with Potential SCWE

Cross-cutting aspect

- Additional independent reviews beyond normal IR review to ensure regional consistency



Safety Culture Workshop

Substantive Cross-Cutting Issues

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Linda Joy Smith, RIV DRS



Overview

- Recap Cross-Cutting Areas & Safety Culture Components
- Assessment Process
- Substantive Cross-Cutting Issues
- Criteria From Safety Culture Initiatives



REGULATORY FRAMEWORK

NRC's
Overall
Safety
Mission

**PUBLIC HEALTH AND SAFETY
AS A RESULT OF CIVILIAN
NUCLEAR REACTOR
OPERATION**

Strategic
Performance
Areas

**REACTOR
SAFETY**

**RADIATION
SAFETY**

SAFEGUARDS

Cornerstones

**INITIATING
EVENTS**

**MITIGATION
SYSTEMS**

**BARRIER
INTEGRITY**

**EMERGENCY
PREPAREDNESS**

PUBLIC

OCCUPATIONAL

**PHYSICAL
PROTECTION**

**HUMAN
PERFORMANCE**

**SAFETY CONSCIOUS WORK
ENVIRONMENT**

**PROBLEM
IDENTIFICATION AND
RESOLUTION**



Recap Summary

CROSS-CUTTING AREA	SUBCATEGORIES	NEW CROSS-CUTTING COMPONENTS
PROBLEM IDENTIFICATION AND RESOLUTION	<ul style="list-style-type: none"> • identification • evaluation • corrective action 	<ul style="list-style-type: none"> • corrective action program • self- and independent assessments • operating experience
HUMAN PERFORMANCE	<ul style="list-style-type: none"> • personnel • resources • organization 	<ul style="list-style-type: none"> • decision-making • resources • work control • work practices
SAFETY CONSCIOUS WORK ENVIRONMENT	<ul style="list-style-type: none"> • none 	<ul style="list-style-type: none"> • environment for raising safety concerns • preventing, detecting, and mitigating perceptions of retaliation



Assessment Process

- The Process
 - Mid Cycle
 - End of Cycle



Assessment Process

- Cross-Cutting Issue Assessment
 - Identification of a Finding
 - Verbal Communication of Crosscutting Aspects
 - Documentation of Issue



Assessment Cont'd

- Cross-Cutting Issue Assessment
 - Number of Findings
 - Common Theme
 - Scope of Effort



Substantive Cross-Cutting Issue (SCCI)

- Are there more than 3 similar findings in current 12-month assessment period?
- Is the underlying theme (four or more inspection findings with causes in same cross-cutting aspects) present in multiple cornerstones?
- Does the staff have a concern with the licensee's scope of effort or progress in addressing area?



Additional Guidance For SCCI

- This guidance has been enhanced to facilitate the Agency's decision if it has a concern with the licensee's scope of effort or progress in addressing the cross-cutting theme



Additional Guidance For SCCI

- The licensee had not identified or recognized that the cross-cutting performance deficiency affected other areas and so had not taken any actions to address the cross-cutting theme, **OR**
- The licensee recognized that the cross-cutting performance deficiency affected other areas but failed to schedule to take appropriate corrective action, **OR**



Additional Guidance For SCCI

- The licensee recognized that the cross-cutting performance deficiency affected other areas but waited too long to take corrective actions. In this case, judgment and risk insights should be used to help prioritize the timing of licensee corrective actions to address the cross-cutting performance deficiency.



Guidance For SCCI

- Problem Identification and Resolution and Human Performance (unchanged)
- Safety Conscious Work Environment – SCWE (new)



Criteria for SCWE SCCI

Safety Conscious Work Environment (New)

1. There is an inspection finding in the current 12-month assessment period with a documented cross-cutting aspect in the area of safety conscious work environment (SCWE);
OR
2. The licensee has received a chilling effect letter; **OR**
3. The licensee has received correspondence from the NRC which transmitted an enforcement action with a severity level of I, II, or III, involving discrimination.



Criteria for SCWE SCCI

Safety Conscious Work Environment (SCWE)

Additionally, both of the following criteria must also be met in order to have a substantive cross-cutting issue in SCWE:

1. The associated impact on safety conscious work environment was not isolated, **AND**
2. The Agency has a concern with the licensee's scope of efforts or progress in addressing the individual and collective performance deficiencies that satisfied the previous criteria for SCWE.



Assessment Cont'd

- Substantive Cross-Cutting Issue Review
 - Document Results in the Assessment Letter
 - Focused Baseline Inspection Program
 - Reassess at Next Assessment Meeting
 - Close Issue



Assessment Cont'd

- Substantive Cross-Cutting Issue Review
 - Regional office may consider additional options for those plants where a substantive cross-cutting issue has been raised in at least two consecutive assessment letters



Assessment Cont'd

- Substantive Cross-Cutting Issue Review
 - Options
 - Licensee to provide a response at the next annual public meeting
 - Licensee to provide a written response to the substantive cross-cutting issues raised in the assessment letters
 - Separate meeting to be held with the licensee



Recurring SCCI

- NRC may request a licensee perform a safety culture assessment when a substantive cross-cutting issue with the same cross-cutting theme has been identified in three or more consecutive assessment letters
- The request will typically be for the licensee to conduct a self-assessment



Questions?



Questions Later

- Update or Dispute Inputs to SCCI Review
 - Pre-Exit Meeting Discussions
 - Exit Meeting Discussions
 - Management Discussions Post-Exit
 - Respond in Writing



Assessment Results Should Not be a Surprise

Visual representation of the relationships between the safety culture/cross-cutting terminology:

