NRC Advanced Reactor Construction Oversight Process (ARCOP)

Workshop #5

Quality Assurance Program (QAP)
Programmatic Inspections
and
Assessing Safety Culture

Introduction and Guidelines

ARCOP Workshop Sessions
(Meeting Summary ML)

Session 1, February 28 and March 20, 2024:
Introduction to ARCOP, and the ARCOP Framework.
(ML24078A063)

Session 2, April 3, 2024:
Inspection Scoping
(ML24123A214)

Session 3, May 22, 2024:
Enforcement and SDP
(ML24177A120)

Session 4, July 17, 2024:
Assessment Tabletop Summary
Feedback/Wrap Up
(ML24227B033)

Session 4, December 10, 2024:
QAP Programmatic Inspections and Assessing Safety Culture

Workshop #5 Agenda

1. QAP Programmatic Inspections
   - Background and Lessons Learned
   - ARCOP Approach

2. Safety Culture Assessment
   - Background and Lessons Learned
   - Safety Culture Assessment Options

3. Open Discussion

QAP Programmatic Inspections – cROP Background and Lesson Learned

- Early QAP programmatic team inspection (within 6 months) for all QA requirements in 10 CFR 50, Appendix B
- Corrective Action Program (CAP) effectiveness team inspection
- Regular QAP programmatic team inspections focusing on implementation of QAP
- QA implementation inspected as part of ITAAC inspections

Lesson learned: Regular QAP programmatic team inspections were largely redundant to ITAAC inspections.

QAP Programmatic Inspections- ARCOP Approach

- Early QAP programmatic inspection, including CAP effectiveness
- “Vertical slice” inspections to include QAP implementation elements (discussed in workshops 1-4)

Safety Culture Assessment Background and cROP Lessons Learned

NRC Final Safety Culture Policy – Definition of Safety Culture

"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."

NRC Final Safety Culture Policy

NRC Safety Culture Policy – Safety Culture Applicability

- *licensees*
- *certificate holders*
- *permit holders*
- *authorization holders*
- *holders of QAP approvals*
- *vendors and suppliers of safety-related components*
- *applicants for a license, certificate, permit, authorization, or quality assurance program approval*

NRC Safety Culture Policy – Background

2006: NRC revised the ROP to include safety culture assessment in response to Davis-Besse reactor head degradation.

2011: NRC modeled cROP safety culture assessment on the ROP.

2014: ROP and cROP safety culture terminology aligned to NUREG 2165, “Safety Culture Common Language”

ROP/cROP
Cross-Cutting Areas

Safety culture traits are grouped into 3 Cross-Cutting Areas

Human Performance (Hu)

Problem Identification and Resolution (PI&R)

Safety Conscience Work Environment (SCWE)

ROP/cROP Cross-Cutting Area Assessment (IMCs 0310 and 2505)

- Cross-Cutting Aspects (CCAs): The performance characteristic of a finding that is either the primary cause of the performance deficiency or the most significant contributing cause.
- There are 14 Hu CCAs, 6 PI&R CCAs, 3 SCWE CCAs, and 12 supplemental CCAs.
- Generally, one CCA is assigned to each NRC and self-revealing finding.
- Findings are binned by CCA and by cross-cutting areas.

cROP Cross-Cutting Area Assessment (con't)

- If the number of findings in a bin reaches a predetermined threshold, then a cross-cutting theme is declared.
- 3 consecutive cross-cutting themes turns into a cross-cutting issue.
- Cross-cutting issues are only closed after additional actions are taken by licensee with NRC verification.

cROP Construction-Specific Lessons Learned

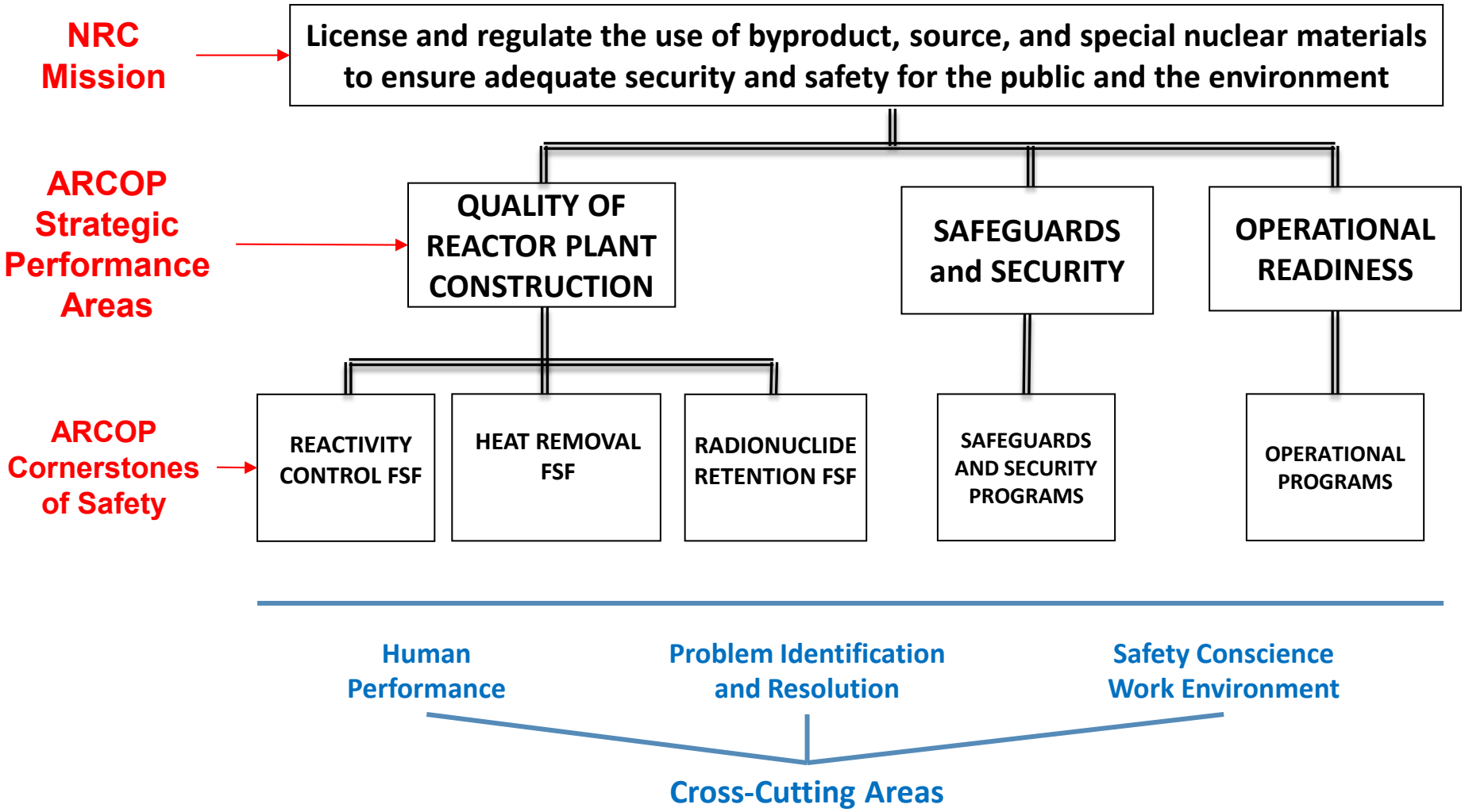
1. Varying sampling rates (inspection rates) leads to inconsistent normalized performance thresholds during construction.

2. Multiple, transient construction work organizations performing work in different technical areas and units comingles inputs and assessment results.

3. Construction requires a faster response to safety culture trends.

4. Self-revealing construction errors are rare, and a smaller fraction of errors are used as assessment input as CCAs during construction.

ARCOP Framework



Assessing Safety Culture – Hu and PI&R*

1. Status Quo
   - CCAs quantitatively trended to identify potential safety culture concerns requiring follow-up

2. Qualitative Assessment
   - Continue to assign CCAs to inspection findings but use qualitative assessment to identify potential safety culture concerns requiring follow-up.
   - Credit for licensee self-identification and corrective actions.

3. Licensee Self-Assessment
   - QAP programmatic inspection will provide specific emphasis on licensee CAP and QAP audits (criterion XVI/XVIII programs).
   - Licensee audits monitor effectiveness of QAP program implementation, which may be impacted by safety-culture weaknesses.
   - If events/findings occur that call into question the adequacy of licensee CAP and/or audit programs, follow-up NRC inspection may be warranted.

*SCWE will continue to be assessed via allegation process and supplemental inspections

Safety Culture Assessment Options (Hu and PI&R)

Options	CCAs?	SC Themes?	Response to Potential Safety Culture Concerns
1. Status Quo	Yes	Yes	Focused PI&R for CC themes
2. Blended Assessment	Yes	Yes	Focused PI&R for CC themes, credit for self-identification and correction
3. Licensee Self-Assessment	No	No	Potential repeat of portions of QAP programmatic inspections

Safety Culture Assessment Options (Pros/Cons)

Option 1: Status Quo/cROP

Pros:

- Known process
- Quantifies data that can be trended

Cons:

- See cROP Lessons Learned (slide 14).

Safety Culture Assessment Options (Pros/Cons)

Option 2: Blended assessment

Pros:

- CCAs provide insights into safety culture
- No set CCA thresholds
- Credit for self-identification and correction of safety culture issues

Cons:

- Qualitative input has subjective element

Safety Culture Assessment Options (Pros/Cons)

Option 3: Licensee Self-Assessment

Pros:

- Focuses responsibility for safety on licensees. Retains NRC independent oversight.
- Allows for different approaches to safety culture assessment by licensees.

Cons:

- May require additional QAP/CAP focus during initial QAP inspection as compared to other options.

NRC Safety Culture Assessment

Open Discussion/Additional Options

NRC Safety Culture Assessment

End of Workshop

Acronyms

ARCOP	Advanced Reactor Construction Oversight Program
CAP	Corrective Action Program
CCA	Cross Cutting Aspect
cROP	Construction Reactor Oversight Process
FSF	Fundamental Safety Function
HU	Human Performance
PI&R	Problem Identification and Resolution
QAP	Quality Assurance Program
ROP	Reactor Oversight Process
SCWE	Safety Conscious Work Environment
SSC	Structure, System, or Component