PRA Configuration Control (PCC) Significance Determination Process (SDP) Meeting

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U.S.NRC
United States Nuclear Regulatory Commission
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Meeting Details and Purpose

- Observation Public Meeting
- Provides public attendees the opportunity to observe the NRC discussing regulatory issues
- Continue discussion of NRC's oversight enhancement of PRA Configuration Control (PCC) processes and implementation
- Meeting focus: Significance Determination Process (SDP) proposal

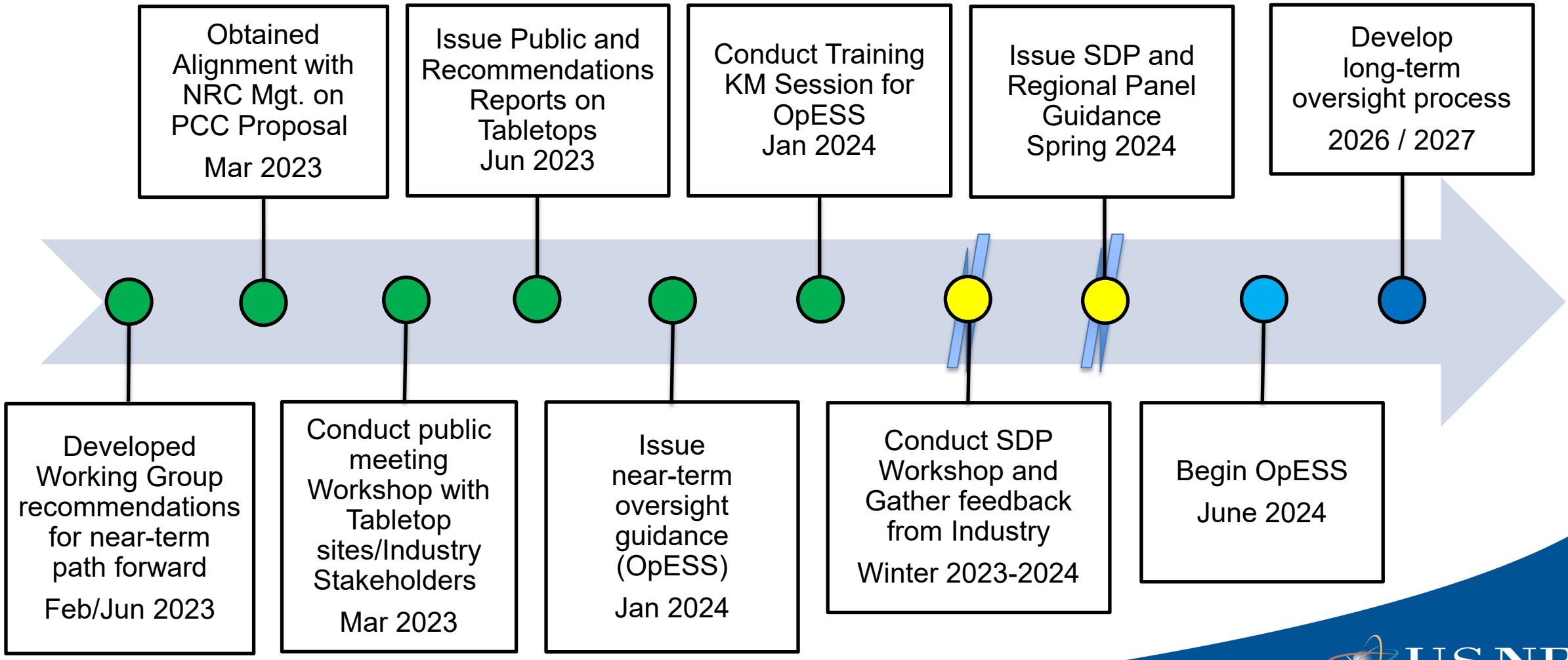
Meeting Agenda

- Introductions
- NRC Presentation – Background and SDP Proposal
- NRC Presentation – SDP Examples
- Q&A and Discussion
- NEI/Industry Presentation(s) – SDP Examples
- Q&A and Discussion
- Break, if necessary
- Public Comments/Questions
- Closing Comments

Introductions

1) NRC
2) Industry
3) Members of Public

PCC Project Milestones



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Key Messages

- Multiple Regulatory requirements for PCC.
- If the PRA is not maintained up to date, reflective of the as-built, as-operated plant, then risk estimates and risk-informed decisions could be impacted and could impact the safe operational management of the facility.
- The OpESS was issued (ML23255A006)
- Cross-regional review panel process will ensure consistent application across the Regional Offices.
- Guidance for cross-regional panels is currently in DRAFT.

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SDP Key Points

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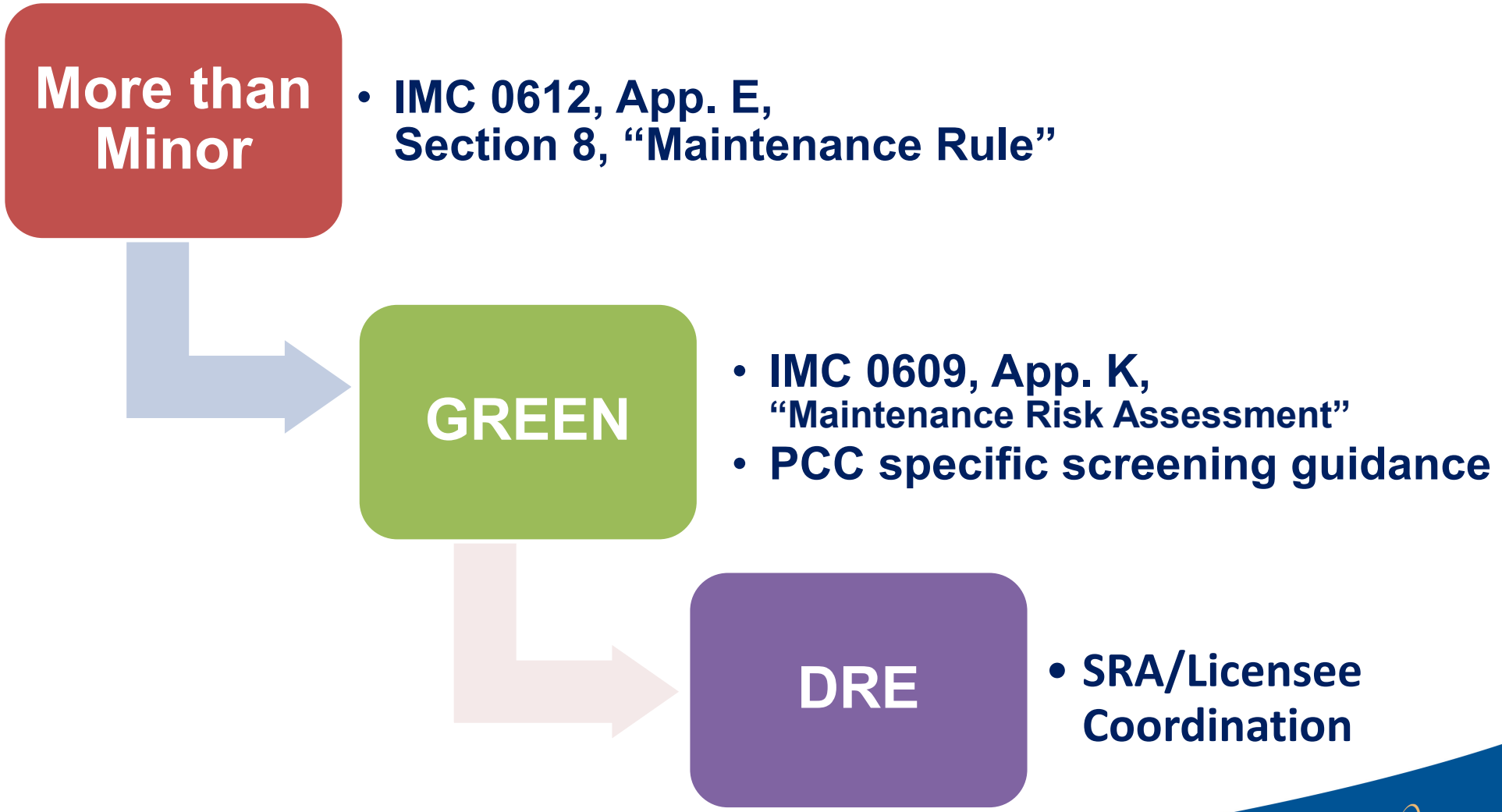
- Maintain regulatory predictability.
- Utilize existing known processes.
- Reliable consistent SDP outcomes.

PCC SDP Proposed DRAFT Pathway



DRAFT SDP Pathway for PCC - Details

Cross Regional Review Panel screening path:
Pathway utilized for General Guidance

- **IMC 0612, App. B, Issue Screening**
  - More than Minor → **IMC 0612, App. E., Section 8, Maintenance Rule**
  - DRAFT PCC Specific More than Minor Criteria
- **IMC 0609, Att. 04, Initial Characterization of Findings**
- **IMC 0609, App. K, Maintenance Risk Assessment and Risk Management SDP**
  - Cross Regional Review Panel Guidance
  - Incremental Core Damage Probability Deficit (ICDPD) Licensee or SRA derived.

DRAFT Screening Criteria for PCC

IMC 0609, App. K, (Utilized for General Guidance).

- Determination of Risk Deficit
  - Incremental Core Damage Probability Deficit (ICDPD)
  - ICDPD = ICDP Actual – ICDP Flawed
  - Limited exposure to 1-year or last model change (most limiting)
- Deficit (ICDPD) < 1E-6 = GREEN
  - Best available information
  - Licensee PRA-based evaluation (Step 4.1.1) or
  - SRA bounding analysis (Step 4.1.2)
- Greater than 1E-6 → perform Detailed Risk Evaluation (DRE)
  - General Guidelines of Flowchart 1 and Step 4.2

NRC PCC SDP Examples

1) Data not being updated within required time limits
2) Failure to review a plant change for impact on the PRA model
3) Documentation and/or Justification Issue
4) RICT Calculation Error
5) Modeling Control Error Example 1
6) Modeling Control Error Example 2

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NRC Example 1:

Description: Data not being updated within required time limits.

Performance Deficiency (PD): Failed to perform data update within the period of every 2 refueling outages.

Screening: If left uncorrected, the PD could have the potential to lead to a more significant safety concern or, PD associated with the MS cornerstone of equipment performance and specifically could have affected the availability and reliability of the SSC.

0612 App. E (**Examples of Minor Issues**): Similar to 8.a, 1.c (program), 3.a (technical error in calculation), 3.h (non-conservative value used), 3.l (used non-conservative data vs. industry data)

Minor if: Recalculation did not adversely affect the cornerstone reliability and unavailability, specifically the condition did not change any risk-informed decisionmaking (RIDM), data (e.g. MSPI) or other risk-based evaluations,
or if the licensee had previously performed a reasonable evaluation justifying the extension.

More than minor (MTM) if: Reasonable doubt (RD) the PD could adversely affect reliability and unavailability prior to recalculation, and/or RD that recalculation **could have the potential** to adversely change any RIDM in an unfavorable manner or, could have resulted in a non-conservative RIDM outcome.

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NRC Example 2:

Description: Licensee did not review a plant change for impact on the PRA model. Issue wasn't modeled (or failed to model/PRA group missed modeling a change to the plant).

PD: Licensee failed to perform a review of a change or modification to the plant.
a) Change was not required IAW the PRA Standard, b) Change was a required element IAW the PRA Standard.
c) Change required an update to online risk model, d) Change was significant and required immediate update or required PRA Upgrade.

Screening: If left uncorrected, PD could have the potential to lead to a more significant safety concern or, PD associated with the MS (or IE) cornerstone of equipment performance and could have affected the availability and reliability.

0612 App. E (**Exs. of Minor Issues**): Similar to 8.c, 8.d, 1.c, 3.a, 3.h, 3.l

Minor if: Review determined the change evaluation did not adversely affect the cornerstone or the reliability and unavailability, specifically the condition was not required IAW the PRA Standard. See (a) above.

MTM if: RD concerning an adverse impact to the cornerstone or the reliability and unavailability prior to evaluation, or there was RD that the missed change/modification could have the potential to change a risk evaluation in an unfavorable manner; or resulted in or could result in a non-conservative RIDM outcome;
or if the change required an analysis IAW the PRA Standard or resulted in a change or required a future change to the PRA. See (b), (c), and (d).

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NRC Example 3:

Description: The licensee failed to provide documentation to adequately demonstrate compliance with maintaining the PRA program. Specifically, the licensee lacked adequate records to support decisions, and/or evaluations of changes, descriptions, and PRA changes, including but not limited to PRA Upgrades and PRA Maintenance, and records of PRA reviews.

PD: Licensee failed to adequately document PRA changes.

Screening: If left uncorrected, PD could have the potential to lead to a more significant safety concern or, PD associated with the MS (or IE) cornerstone of equipment performance and could have affected the availability and reliability.

0612 App. E (**Exs. of Minor Issues**): Similar to 1.a, 1.c, 3.a, 3.h, 3.l

Minor if: PD did not adversely affect the cornerstone or reliability/unavailability, specifically there was reasonable assurance without significant re-evaluation to conclude change was insignificant to PRA and associated RIDM outcome.

MTM if: PD adversely affected the cornerstone or reliability/unavailability, or RD concerning the reliability/ unavailability prior to updated evaluation, specifically significant effort required to duplicate or reperform the evaluation.
Or documentation was associated with or supported a PRA Upgrade or was a factor in supporting a conclusion regarding a PRA Upgrade or PRA Maintenance or was documentation associated with supporting a Peer Review IAW the PRA Standard.

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NRC Example 4:

Description: Error identified in a risk informed completion time (RICT) calculation.

PD: Licensee failed to accurately calculate a risk analysis for a RICT.

Screening: If left uncorrected, PD could have the potential to lead to a more significant safety concern or, PD associated with the MS (or IE) cornerstone of equipment performance and could have affected the availability/reliability.

0612 App. E (**Exs. of Minor Issues**): Similar to 1.a, 1.c, 3.a, 3.h

Minor if: PD did not adversely affect the cornerstone or reliability/unavailability, and did not adversely impact the licensee's RIDM, plans, RMAs or schedules. Error was conservative and did not require significant effort to evaluate/update.

MTM if: PD caused RD concerning the reliability/unavailability prior to re-evaluation, or there was RD that error or omission could have potential to change a risk evaluation in an unfavorable manner; or resulted or could result in non-conservative RIDM outcome; including significant decrease in the available RICT calculated backstop.
Or the error significantly affected the RMA time (RMAT) or resulted in the RMAT being passed without knowing.
Or the error in the RICT was non-conservative in nature and/or required significant effort to evaluate or update.

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NRC Example 5:

Description: PRA did not accurately reflect the as operated Plant. Changed an operating philosophy so the operating equipment train was not necessarily the protected equipment train. Impacts of the operational change on the PRA model were not assessed and therefore the risk assessment tool (RAT) used by operators did not match actual plant conditions resulting in non-conservative risk assessment, impacting baseline CDF calculations and RICT values.

PD: Licensee failed to maintain PCC of the PRA model with the RAT IAW licensee procedures.

Screening: If left uncorrected, PD could have the potential to lead to a more significant safety concern or, PD associated with the MS (or IE) cornerstone of equipment performance and could have affected the availability/reliability.

0612 App. E (**Exs. of Minor Issues**): Similar to 1.c, 3.a, 3.h

Minor if: PD did not adversely affect cornerstone since contribution to reliability/unavailability was insignificant when compared to initial assessments, and resulting change did not impact the RIDM process and did not require significant changes to risk assessments or plans and higher risk categories were not entered because of any updates.

MTM if: PD caused RD of adverse impact to the cornerstone reliability/unavailability prior to the evaluation, and/or RD that error could potentially or did significantly change risk evaluation in an unfavorable manner; or resulted or could result in non-conservative RIDM outcome; or change required entry into a higher risk category, or caused additional compensatory actions than originally planned.

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NRC Example 6:

Description: Licensee did not account for the fact that SSCs were required to be in a specific alignment/position for the given plant configuration being analyzed.

PD: Licensee failed to adequately capture and analyze SSCs and their interrelationships for an event. .

Screening: If left uncorrected, PD could have the potential to lead to a more significant safety concern or, PD is associated with the IE or MS cornerstone of equipment performance and could have affected availability/reliability of the SSC.

0612 App. E (**Exs. of Minor Issues**): Similar to 1.c, 3.a, 3.h

Minor if: PD did not adversely affect MS cornerstone since contribution to reliability/unavailability was insignificant, and resulting change did not impact RIDM process, and did not require significant changes to assessments or plans. No higher risk categories entered because of updates. Review determined error/condition was not required to be analyzed IAW the PRA Standard.

MTM if: PD caused RD concerning adverse impact to the cornerstone or reliability/unavailability prior to evaluation, and/or RD that error could have potential to change risk evaluation in an unfavorable manner; or resulted or could result in a non-conservative RIDM outcome; or if the error or omission should have been a required analysis/input IAW the PRA Standard or required in an unplanned revision or update to the PRA model.

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Questions

Utility PCC SDP Examples

1) Utility admin procedure high-level requirement stating: Configuration control of the plant PRA Models SHALL be maintained.
2) Utility admin procedure step that states: …ensure common-backbone model (CBM) logic changes are checked for proper impact to other hazards.
3) Utility admin procedure step that states:…continuous monitoring of PRA inputs against various changes (e.g., plant changes, change in state of knowledge, methodology changes…

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Example 1:

Utility admin procedure high-level requirement stating: *Configuration control of the plant PRA Models SHALL be maintained.*

Relevant IP Step:

03.02.a.1 Review PCC related administrative procedures to ensure that PCC processes are in place and are being followed.

Example Analysis:

- This step is open to interpretation due to the timing aspect.
- A plant change that has not been evaluated or incorporated into the model at the time the change is implemented into the plant may be considered a non-compliance of our procedure and a performance deficiency.
- A plant change that was evaluated and incorporated/not incorporated into the model without documentation that meets the PRA Standard may be considered an issue of concern

Enforcement:

- No PD - Issue was only the result of inadequate documentation of the basis for the change, and utility has processes for tracking/incorporation of plant changes and can describe the basis for incorporating/not incorporating OR change is tracked for future evaluation.
- Minor - Documentation is an issue of concern and our process did not ensure impacts to the PRA receive evaluation/documentation. Cornerstone not adversely impacted.
- MTM (more than minor) - Change that wasn't evaluated or incorporated adversely affected an associated cornerstone; significance depends on risk and exposure time.

Example 2:

Utility admin procedure step that states: *…ensure common-backbone model (CBM) logic changes are checked for proper impact to other hazards.*

Relevant IP Step:

03.03 *Verify processes and procedures were completed appropriately to ensure the PRA program was being sufficiently maintained to support past and current Risk-Informed decisions.*

Example Analysis:

- The utility conducted a specific hazard PRA update at a site and the internal events model was impacted in an unexpected way, which was found after model signoff during the MSPI update. This may be considered a performance deficiency.

Enforcement:

- No PD – Licensee identified the issue prior to inspection or use for any application and initiated corrective action commensurate with risk impact per procedures, error not systematic or systematic issue corrected.
- Minor - Issue was NRC-identified, the impact can be shown to be of negligible impact and the utility initiated corrective action OR issue was licensee identified and corrective action initiated after use for Risk-Informed decisions.
- MTM – NRC or licensee identified after use for Risk-Informed decisions and the issue cannot be shown to be of negligible impact; actual impact to cornerstone (e.g. actual MSPI margin not understood and exceeded due to error, actual maintenance rule/RICT evaluations impacted); significance depends on risk and exposure time.

Example 3:

Utility admin procedure step that states:*…continuous monitoring of PRA inputs against various changes (e.g., plant changes, change in state of knowledge, methodology changes…*

Relevant IP Step:

03.02.a.1 Review PCC related administrative procedures to ensure that PCC processes are in place and are being followed.

Example Analysis:

- Failure to include newly released industry guidance, or significant information, in the model log for tracking, or failure to document/disposition the guidance, may be considered an issue of concern

Enforcement:

- No PD – Issue is being tracked for evaluation and incorporation/non-incorporation. PRA models not impacted (or insignificantly impacted) or the information was not applicable as dispositioned.
- Minor – New information was not tracked for evaluation, but PRA models could be impacted by the new information or not adequately dispositioned/documented.

Discussion and Q&A

PRA Configuration Control (PCC)
SDP Meeting

Public Questions and Comments

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Closing Remarks

PRA Configuration Control (PCC)
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Meeting Concluded

Meeting Point of Contact:

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Backup Slides

PRA Configuration Control (PCC)
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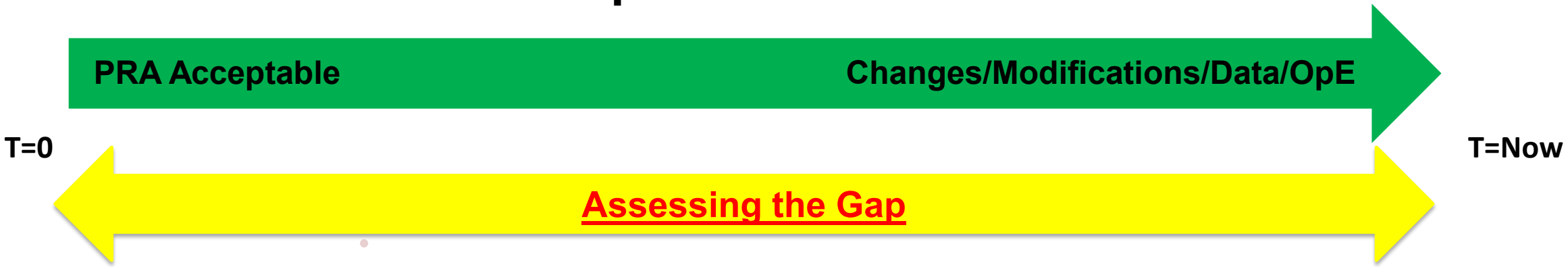
Short Break

Resume at 11:00 Eastern

PRA Configuration Control (PCC) Oversight Gap

PRA found acceptable ► Issuance of SE/LA



Plant Modifications

Operating Experience and Data

PRA Maintenance and Upgrades

No Current permanent NRC Oversight of PRA Changes

OpESS Details

OpESS Objectives:

1. Support inspection activities of PCC programs.
2. Gather information and trends of PCC programs to inform future inspection activities.
3. Verify licensee processes to reasonably ensure PCC activities.

Inspection Guidance:

1. Provide regulatory and operating experience backgrounds.
2. Verify processes and procedures are in place to ensure the PRA program is being maintained to support risk-informed decisions.
3. Verify processes and procedures were completed appropriately to ensure the PRA program was being sufficiently maintained to support past and current risk-informed decisions.

- **Intent would be to revise the OpESS for the subsequent three ROP Cycles based upon observed performance and refocus, as necessary.**

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