

# Reactor Oversight

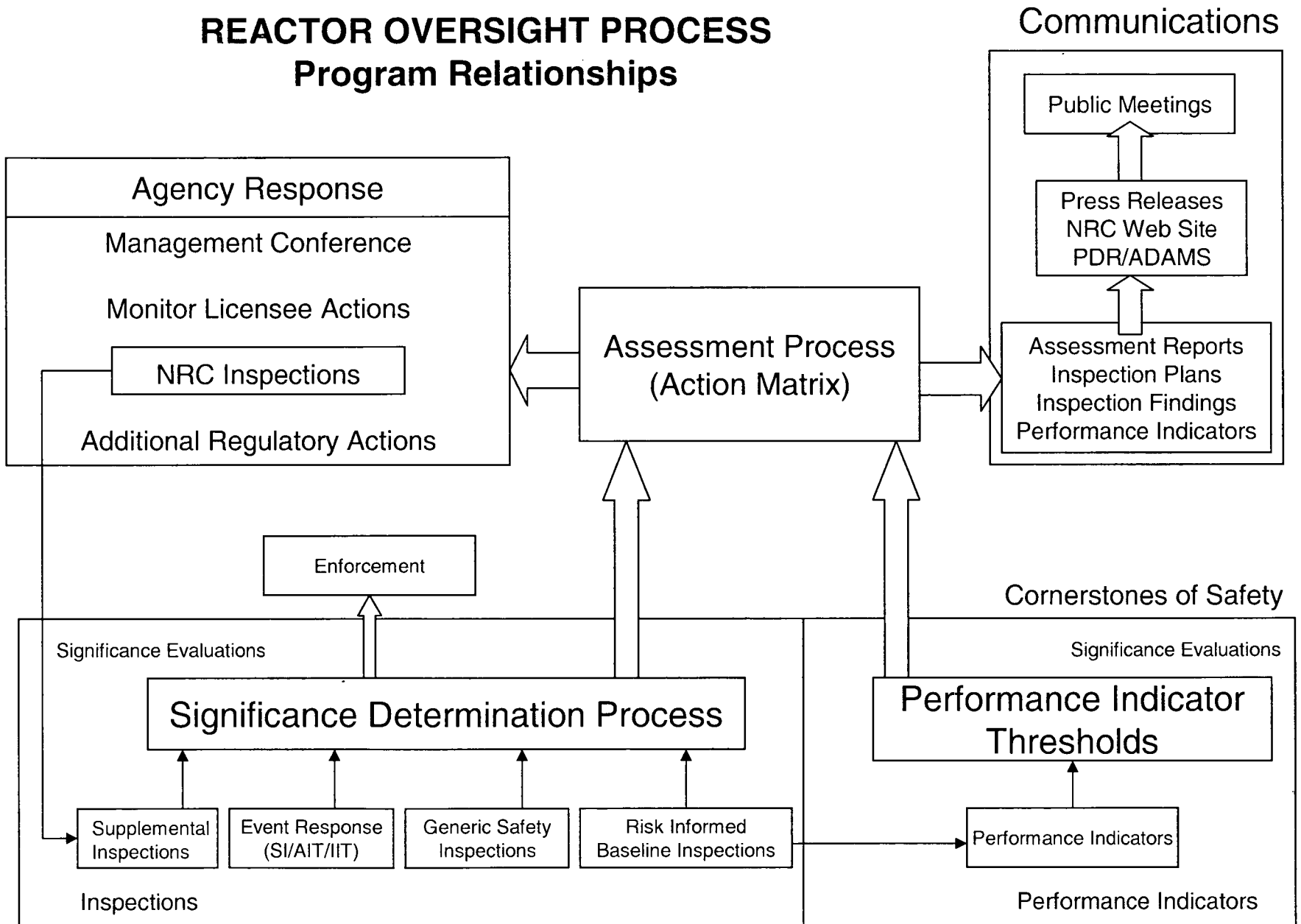
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- Integration of Inspection, Assessment, and Enforcement
- Described in NRC Inspection Manual Chapter 0305
- Includes:
  - Baseline Inspection
  - Significance Determination Process
  - Performance Indicators
  - Licensee Assessment
- Notification of Enforcement Discretion (Part 9900)

# REACTOR OVERSIGHT PROCESS

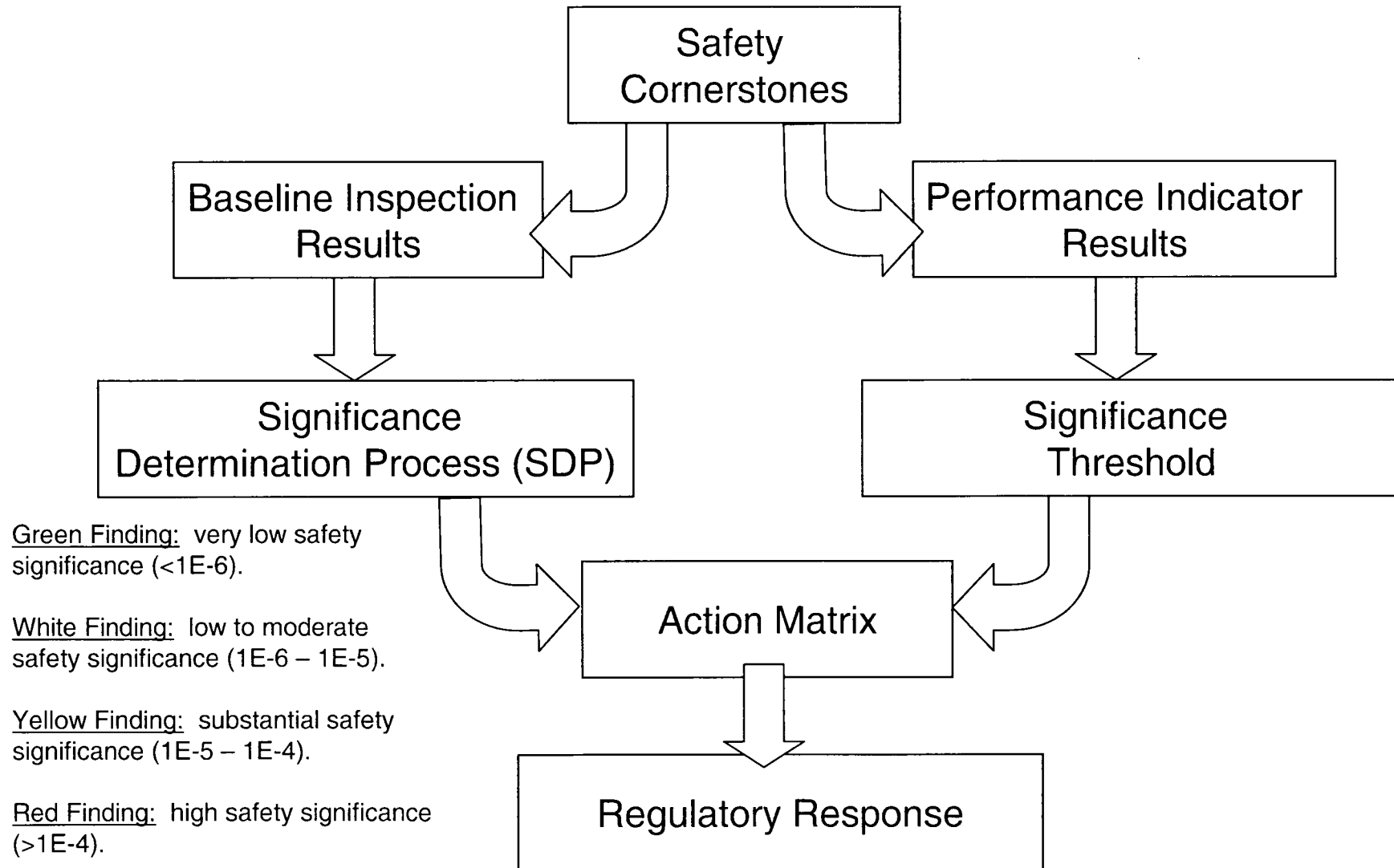
## Program Relationships



← Performance Results in all 7 Cornerstones of Safety →

# Reactor Oversight Process

## Strategic Performance Areas

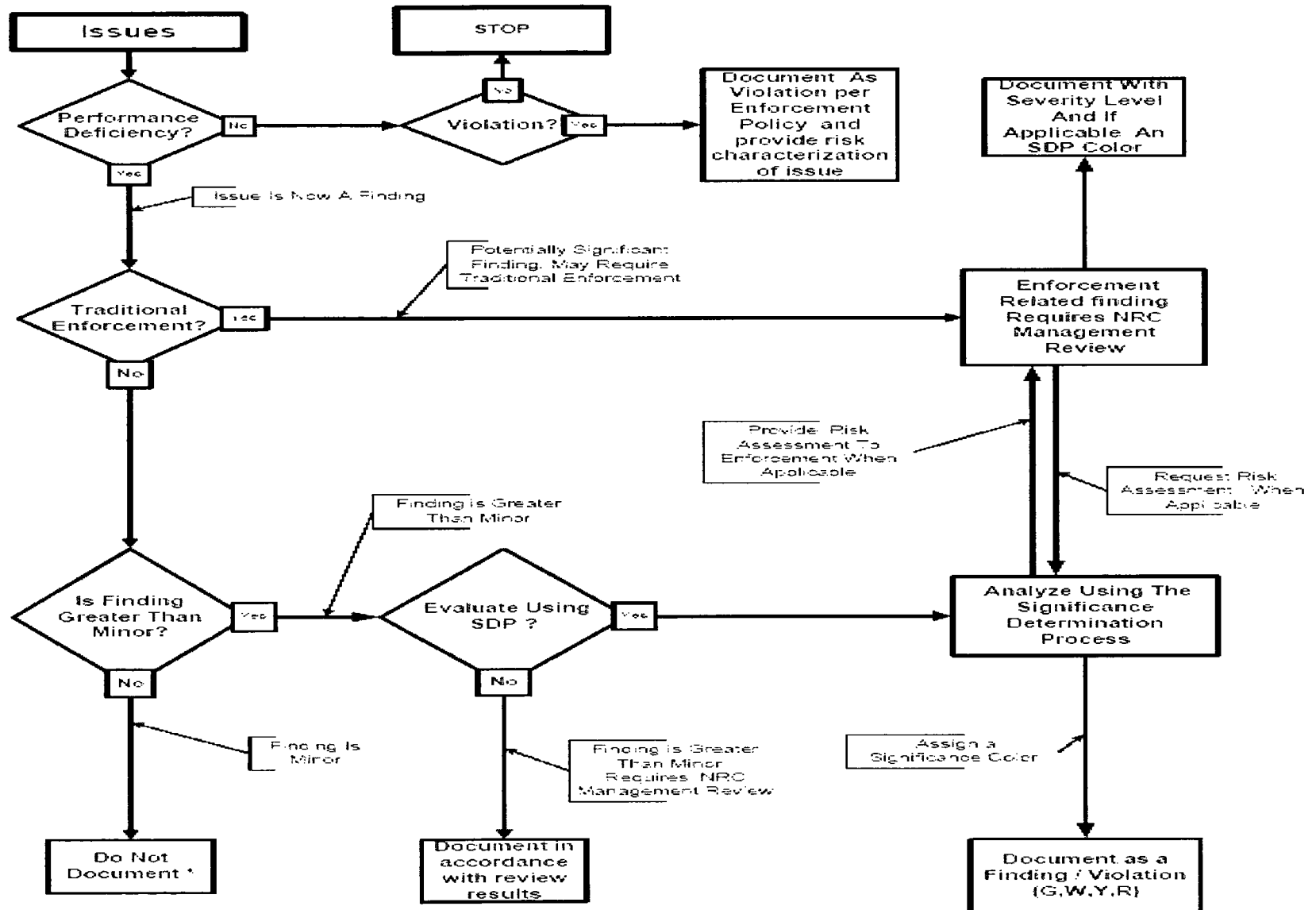


# Significance Determination Process Overview

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- Described in NRC Inspection Manual Chapter 0609
- Risk-Informed Reactor Safety Guidelines:
  - Appendix A: Findings Affecting At-power Operations
  - Appendix G: Findings Affecting Shutdown Operations
  - Appendix H: Large-Early Release Frequency
  - Specialty SDPs:
    - Appendix F: Fire Protection
    - Appendix J: Steam Generator Tube Integrity
    - Appendix K: Maintenance Rule Violations

# Entry into the SDP



\* see exception in Section C5.02

# Reactor Safety

## Significance Determination Process

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- Three Phase Process:
  - Phase 1 Screen Issues
  - Phase 2 Estimate Risk Using Plant Specific Risk-Informed Inspection Notebooks
  - Phase 3 Evaluate Risk Using Modification of Phase 2 and/or Independent Risk Tools
- Phases 1 and 2 are Generally Performed by Inspection Staff, with Assistance of a Senior Reactor Analyst (SRA), When Necessary.
- Phase 3 is Defined as ANY Departure from the Phase 2 Process, and are Performed by Risk Analysts.

# Minor Determination and Phase 1 At-Power Inspection Findings

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- Minor Findings are not Normally Documented.
- Minor Determinations are Made in Accordance with NRC Inspection Manual Chapter 0612, Appendices E and B.
- Greater than Minor Findings are Processed Using the Phase 1 Screening Worksheet.
- The Screening Process is Designed to:
  - Reduce the Number of Findings Processed in Phase 2.
  - Decrease Inspection of Very Low Risk Significant Items.
  - Screen Some Deficiencies Immediately Based on Low Impact.

# Phase 2 Estimation

## At-Power Inspection Findings

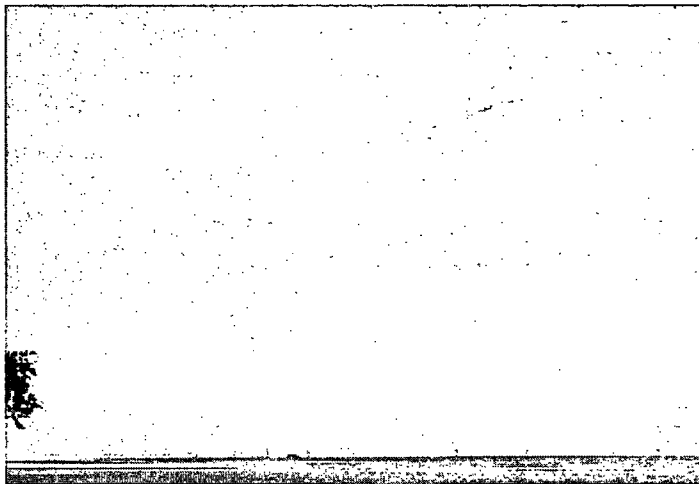
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- Findings are Evaluated Using the Risk-Informed Inspection Notebooks.
- Notebooks Assist the Inspectors in Identifying:
  - The Initiating Events Impacted by the Finding
  - The Accident Sequences Affected
  - The Systems Available to Perform Risk-Significant Functions
  - An Estimated Increase in Core Damage Frequency
- Notebooks Provide Risk Estimates for Findings Involving the Unavailability of Mitigating Systems and/or Increases in Initiating Event Frequencies.



# External Initiator Contribution

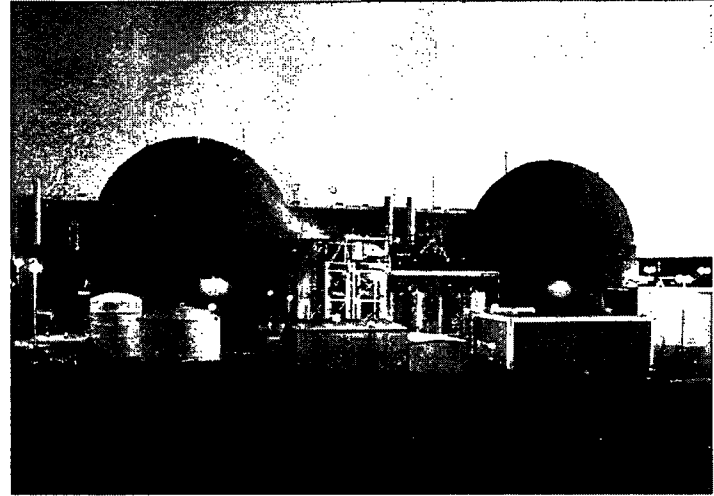
## Phases 2 and 3



- External Risk Contribution may be 10 times greater than Internal Alone
- Required in NRC Inspection Manual Chapter 0609, Appendix A, Attachment 1
- Performed for all internal results greater than  $1 \times 10^{-7}$
- Predominately Fire, Flooding, and Seismic (Except High Winds Season)

# Large-Early Release Frequency

- Large-Early Release Frequency is a Separate Metric for Findings
- Required in NRC Inspection Manual Chapter 0609, Appendix A, Attachment 1
- Performed for all sequences greater than  $1 \times 10^{-7}$
- Currently Evacuation Time Versus Time of Release is Evaluated



# Licensee Input to Phase 2 Process

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- Analyst's May be Asked for:
  - Assessment of Assumption Validity
  - Comments on Phase 2 Applicability
  - Validation of Phase 2 Using Licensee's PRA
  - Input to External Events and/or LERF Assessments
- Licensee May Also be Asked for:
  - Design Documents Related to Deficiency
  - Procedures to Support Recovery Credit
- It is **ALWAYS** in the Licensee's Best Interest to Provide and/or Comment on Completed Phase 2!
- Greater than Green Phase 2 Estimations Usually Proceed to Phase 3.

# Phase 3 Evaluation

## At-Power Inspection Findings

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- **Phase 3 is a Risk Significance Evaluation Using a Risk Basis That Departs from the Phase 2 Process**
  - In Phase 3, SRAs will Refine, Modify, or Supercede the Phase 2 Result.
  - In Addition, Phase 3 Addresses Findings that Cannot be Evaluated Using the Phase 2 Process.
  - While Performing a Phase 3 Evaluation, the SRAs will Use Appropriate PRA or Other Techniques.
  - Specialty Risk Analysts May be Consulted.

# Phase 3 Methods

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- A Phase 3 Evaluation May Include the Following:
  - Portions of the Phase 2 Result
  - A Statement of the Influential Assumptions
  - A Discussion of the Tools Used for the Evaluation
  - The Affected Accident Sequences
  - A Sensitivity Study of the Results for each Major Assumption
  
- The Risk Tools Used May Include:
  - Standardized Plant Analysis Risk Models
  - Draft SDP Tools
  - Portions of the Licensee's PRA
  - Hand Calculations
  - Bounding Analyses

# Licensee Input to Phase 3 Process

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- Licensee is Encouraged to Provide a Complete Phase 3 Evaluation Including:
  - All Assumptions Made
  - The Revision of the PRA Model Used in the Analysis
  - Any Changes Made to the Model of Record
  - The Top Sequence and Event Cutsets
  - External Events Evaluated and Outcome
  - The Methods Used to Evaluate LERF
  - Documentation to Support Recovery and Human Reliability Analyses
  
- Routine Discussions Between the NRC and the Licensee are Encouraged Throughout the Process.