IAEA Workshop
NPP Inspection & Oversight
USNRC Reactor Oversight Process

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March 21-24, 2005

Saclay, France

REACTOR OVERSIGHT PROCESS

- Process Overview
  - Strategic Performance Areas/Cornerstones of Safety
  - Performance Indicators
  - Baseline and Supplemental Inspections
  - Significance Determination Process
  - Event Response
  - Enforcement
  - Assessment

USNRC Mission

License and Regulate the Nation's Civilian Use of Byproduct, Source, and Special Nuclear Materials to Ensure Adequate Protection of Public Health and Safety, Promote the Common Defense and Security, and Protect the Environment

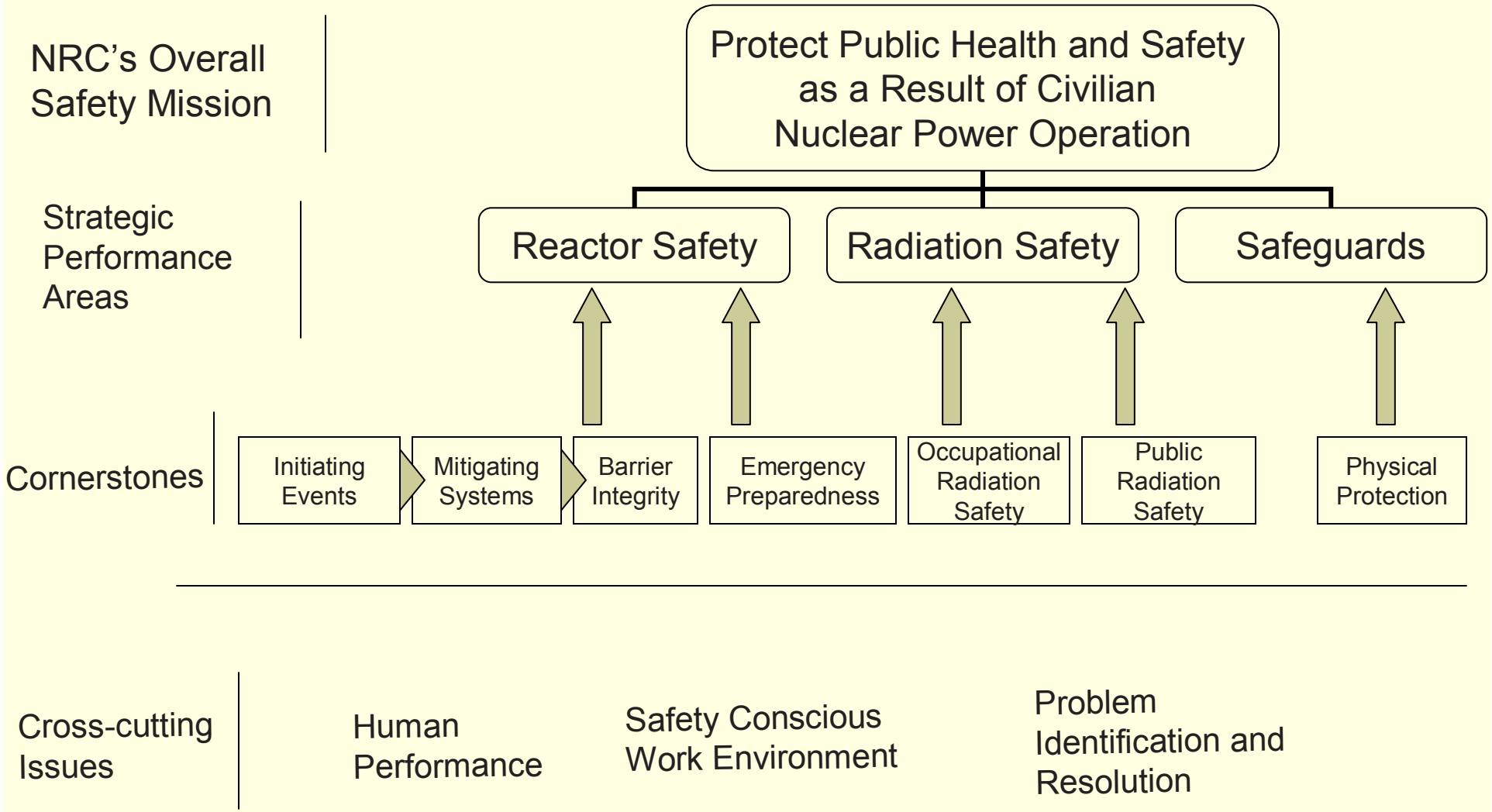
Primary NRC Strategic Plan Goals

- Safety – Ensure protection of public health and safety and the environment by implementing a regulatory oversight framework for continued safe operation of commercial nuclear power plants
- Security – Ensure the secure use and management of radioactive materials
- Openness – Ensure openness in our regulatory process
- Effectiveness – Ensure that NRC actions are effective, efficient, realistic, and timely by focusing resources on most risk significant issues and reducing unnecessary regulatory burden

Features of the Reactor Oversight Process

- Focuses Inspections on Activities Where Potential Risks Are Greater.
- Applies Greater Regulatory Attention to Facilities with Performance Problems While Maintaining a Base Level of Regulatory Attention on Plants That Perform Well.
- Makes Greater Use of Objective Measures of Plant Performance.
- Gives the Industry and Public Timely and Understandable Assessments of Plant Performance.
- Avoids Unnecessary Regulatory Burden.
- Responds to Violations in a Predictable and Consistent Manner That Reflects the Safety Impact of the Violations.

REGULATORY FRAMEWORK



REACTOR SAFETY CORNERSTONES

- Initiating Events – Focus on Minimizing the Occurrences of Events that Could Lead to an Accident.
- Mitigating Systems – Focus on Assuring the Ability of Safety Systems to Respond And Lessen The Severity of an Accident.
- Barrier Integrity – Focus on Maintaining Barriers to The Release of Radioactivity in an Accident.
- Emergency Preparedness – Focus on Plans by Utility and Government to Shelter or Evacuate People in the Event of an Accident.

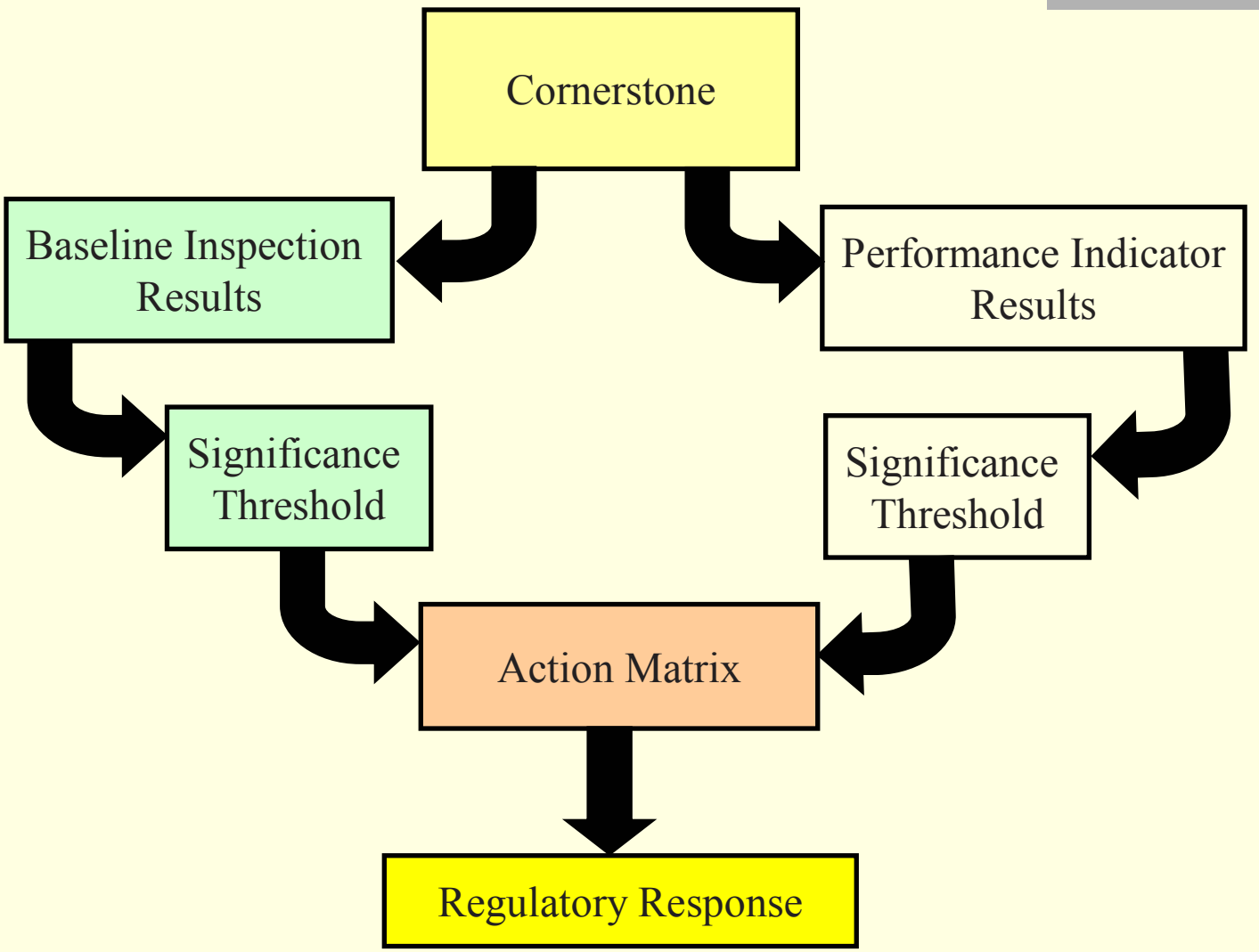
RADIATION SAFETY AND SAFEGUARDS CORNERSTONES

- Public Protection – Focus on Public Protection from Radioactive Exposures due to Routine Reactor Operations
- Occupational Worker Protection – Focus on Protection of Worker Health from Radioactive Exposures due to Routine Reactor Operations
- Physical Protection – Focus on Protection against Radiological Sabotage

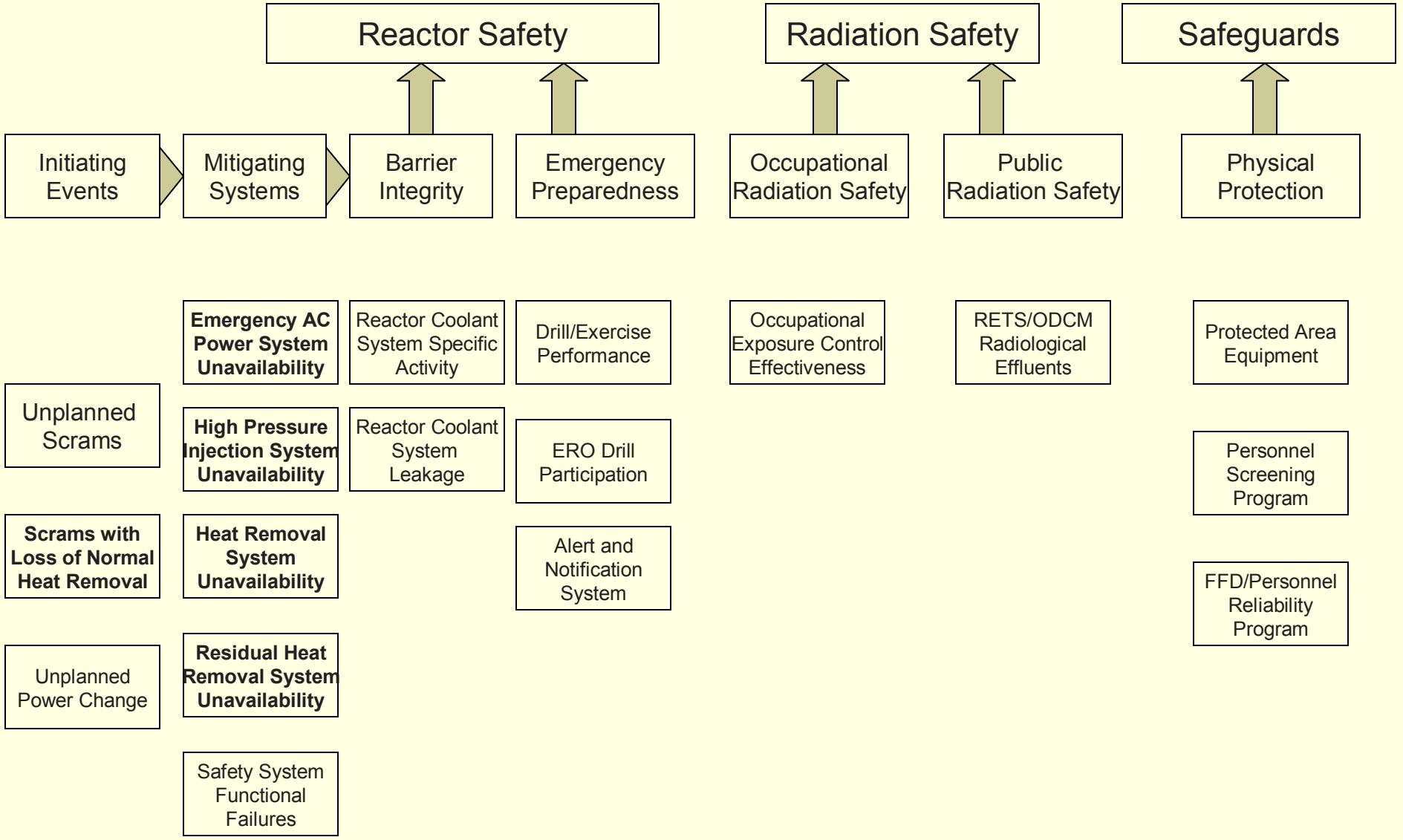
Use of Risk Information

- ROP based on a dual system-performance indicators (PIs) using objective data, and focused inspection that complements the PIs
- Used to identify PIs, and to establish thresholds for regulatory action commensurate with safety significance
- Used to focus the inspection program on those issues important to safety
- A Significance Determination Process (SDP) was developed to assess the safety significance of inspection findings to determine the appropriate regulatory response
- Used for assessing significance of plant events and degraded conditions to help determine appropriate NRC response

REACTOR OVERSIGHT PROCESS



Performance Indicators in the Seven Cornerstones



BASELINE INSPECTION PROGRAM

- Minimum Level of Inspection Conducted at All Plants Regardless of Performance.
- Three Basic Parts:
  - Inspection in Areas Which Performance Indicators Are Not Identified or Do Not Fully Cover a Cornerstone.
  - Performance Indicator Verification.
  - Licensee Problem Identification and Resolution Program.

OTHER INSPECTIONS

- Supplemental Inspections as Needed for Declining Performance
- Event Response or Degraded Condition Inspections When Necessary.
- Inspections for Resolution of Generic Issues.

SIGNIFICANCE DETERMINATION PROCESS (SDP)

- Used to Assign Risk Values (Colors) to Inspection Findings.
- Provides a Methodology for Assessing Inspection Findings and PIs on an Equivalent Basis.
- Developed for all Cornerstones
- SDPs for Reactor Safety for Full Power and Shutdown, Containment Integrity (LERF), and Fire Protection are Based on PSA Models.

SIGNIFICANCE DETERMINATION PROCESS (SDP)

- To Characterize the Significance of an Inspection Finding Consistent with the NRC Regulatory Response Thresholds Used for Performance Indicators (PIs).
- To Provide a Framework for Discussing and Communicating the Potential Significance of Inspection Findings.
- To Provide a Basis for Assessment of Licensee Performance and Enforcement Actions Associated with an Inspection Finding.

SDP DEFINITIONS

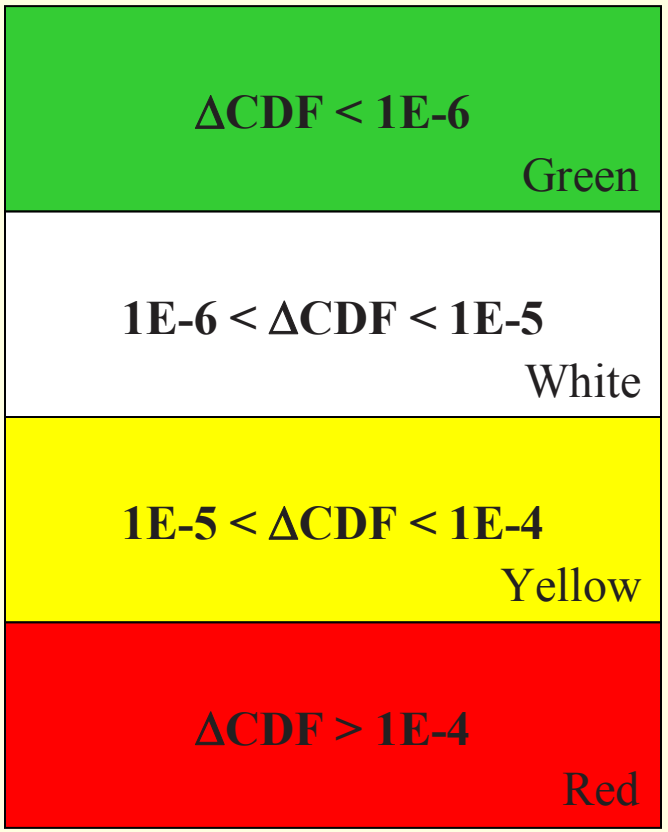
- Observation - A Fact; Any Detail Noted During an Inspection.

- Finding – An Issue of Concern that is Related to a Licensee Performance Deficiency that is of More than Minor Significance. A Finding May or May Not Be Related to a Violation.

- Apparent Risk Significant Finding - Observation Resulting from Deficient Licensee Performance That Has Been Processed Through the SDP and Whose Significance Determination Is Potentially Greater than Green.

LEVEL OF SIGNIFICANCE ASSOCIATED WITH PERFORMANCE INDICATORS AND INSPECTION FINDINGS

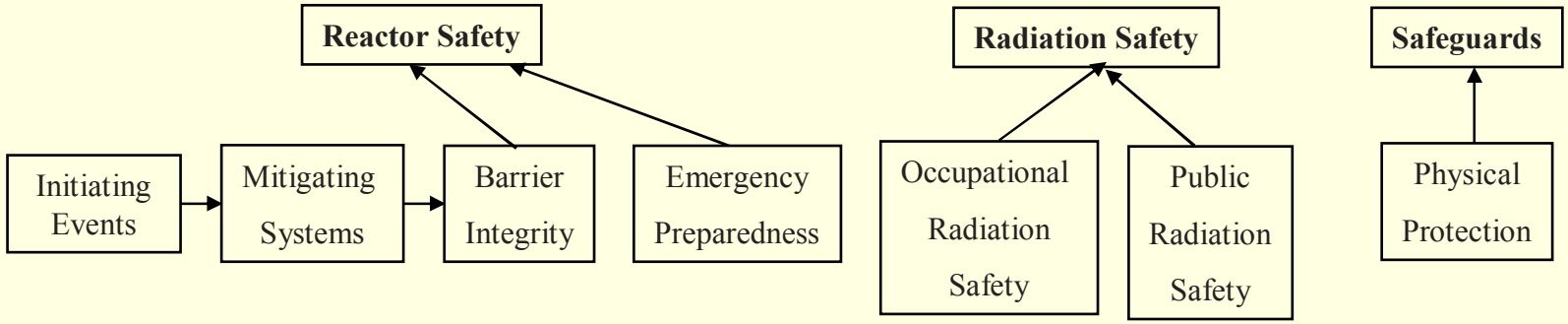
- Green - very low risk significance – baseline inspection
- White - low to moderate risk significance – supplemental inspection (IP 95001)
- Yellow - substantive risk significance – supplemental inspection (IP 95002)
- Red - high risk significance – supplemental inspection (IP 95003)



GREEN FINDINGS

- A Green Finding is Not Good.
- It May Represent Non-Conformance or a Violation.
- However, the Safety Significance of the Finding Is Very Low and Does Not Generally Warrant Further NRC Attention.
- A Green Finding Is Considered to Be Within the “Licensee Response” Column of the NRC Action Matrix
- Licensees Are Still Required to Return to Compliance with the Regulation and Their License Commitments.

Web Page - Plant Performance Summary



Performance Indicators
Based on data through November 30, 1999

Initiating Events	Mitigating Systems	Barrier Integrity	Emergency Preparedness	Occupational Radiation Safety	Public Radiation Safety	Physical Protection
Unplanned Scrams	Emergency AC Power System Unavailability	Reactor Coolant System Specific Activity	Drill/Exercise Performance	Occupational Exposure Control Effectiveness	RETS/ODCM Radiological Effluents	Protected Area Equipment
Scrams with Loss of Normal Heat Removal	High Pressure Injection System Unavailability	Reactor Coolant System Leakage	ERO Drill Participation			Personnel Screening Program
Unplanned Power Change	Heat Removal System Unavailability		Alert and Notification System			FFD/Personnel Reliability Program
	Residual Heat Removal System Unavailability					
	Safety System Functional Failure					

Most Significant Inspection Findings

	Initiating Events	*Mitigating Systems*	*Barrier Integrity*	*Emergency Preparedness*	*Occupational Radiation Safety*	*Public Radiation Safety*	*Physical Protection*
3Q/1999	No findings this quarter	Green	No findings this quarter	No findings this quarter	Green	No findings this quarter	No findings this quarter

ENFORCEMENT OVERVIEW

Violations are Divided into Two Groups:

1 Violations That Can Be Assessed by the SDP

2 Violations Subject to Traditional Enforcement Process

SDP ASSESSED VIOLATIONS

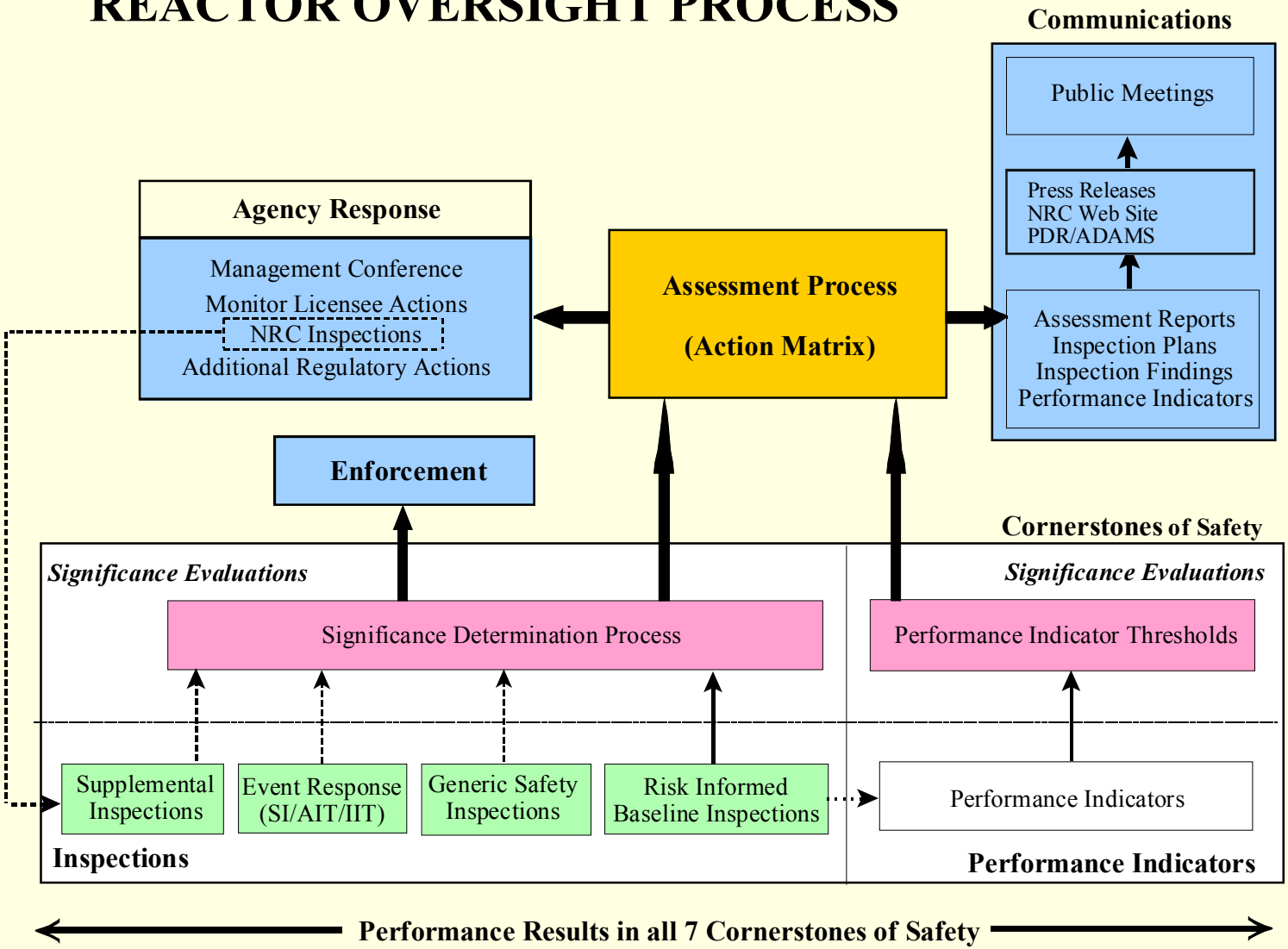
- SDP Will Characterize Risk Associated with Violation.
- Low Risk Significant Violations Will Be Non-Cited and Entered into Corrective Action Program.
- Higher Risk Significant Violations Will Be Subject to Requirements of Action Matrix.

Green | **White** | **Yellow** | **Red**

TRADITIONAL ENFORCEMENT ACTIONS

- Willfulness Including Discrimination.
- Actions That May Impact NRC's Ability for Oversight of Licensee's Activities.
- Actual Consequences Such as an Overexposure to Public or Plant Personnel or a Substantial Release of Radioactive Material.
- Assigned a Severity Level with Potential Civil Penalty

REACTOR OVERSIGHT PROCESS

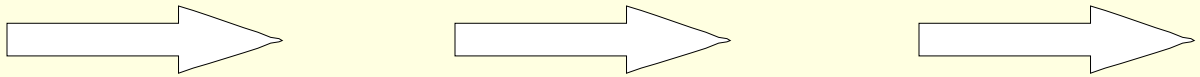


ASSESSMENT

- Performance Indicators and Inspection Findings Are Combined for an Overall Assessment of Plant Performance.
- Action Matrix Is Used to Assess Performance and Determine Regulatory Actions.
- Quarterly, Mid-Cycle and End of Cycle Assessments Are Performed for Each Licensee

ACTION MATRIX CONCEPT

Licensee Response	Regulatory Response	Degraded Cornerstone	Multiple/Rep. Degraded Cornerstone	Unacceptable Performance



Increasing Safety Significance

Increasing NRC Inspection Efforts

Increasing NRC/Licensee Management Involvement

Increasing Regulatory Actions

ACTION MATRIX

Exhibit 5 - ACTION MATRIX

		Licensee Response Column	Regulatory Response Column	Degraded Cornerstone Column	Multiple/ Repetitive Degraded Cornerstone Column	Unacceptable Performance Column	IMC 0350 Process
RESULTS		All Assessment Inputs (Performance Indicators (PIs) and Inspection Findings) Green; Cornerstone Objectives Fully Met	One or Two White Inputs (in different cornerstones) in a Strategic Performance Area; Cornerstone Objectives Fully Met	One Degraded Cornerstone (2 White Inputs or 1 Yellow Input) or any 3 White Inputs in a Strategic Performance Area; Cornerstone Objectives Met with Moderate Degradation in Safety Performance	Repetitive Degraded Cornerstone, Multiple Degraded Cornerstones, Multiple Yellow Inputs, or 1 Red Input; Cornerstone Objectives Met with Longstanding Issues or Significant Degradation in Safety Performance	Overall Unacceptable Performance; Plants Not Permitted to Operate Within this Band, Unacceptable Margin to Safety	Plants in a shutdown condition with performance problems placed under the IMC 0350 process
RESPONSE	Regulatory Performance Meeting	None	Branch Chief (BC) or Division Director (DD) Meet with Licensee	DD or Regional Administrator (RA) Meet with Licensee	RA (or EDO) Meet with Senior Licensee Management	Commission meeting with Senior Licensee Management	RA (or EDO) Meet with Senior Licensee Management
	Licensee Action	Licensee Corrective Action	Licensee root cause evaluation and corrective action with NRC Oversight	Licensee cumulative root cause evaluation with NRC Oversight	Licensee Performance Improvement Plan with NRC Oversight		Licensee Performance Improvement Plan / Restart Plan with NRC Oversight
	NRC Inspection	Risk-Informed Baseline Inspection Program	Baseline and supplemental inspection procedure 95001	Baseline and supplemental inspection procedure 95002	Baseline and supplemental inspection procedure 95003		Baseline and supplemental as practicable, plus special inspections per restart checklist.
	Regulatory Actions[1]	None	Supplemental inspection only	Supplemental inspection only	-10 CFR 2.204 DFI -10 CFR 50.54(f) Letter - CAL/Order	Order to Modify, Suspend, or Revoke Licensed Activities	CAL/order requiring NRC approval for restart.
COMMUNICATION	Assessment Letters	BC or DD review/sign assessment report (w/ inspection plan)	DD review/sign assessment report (w/ inspection plan)	RA review/sign assessment report (w/ inspection plan)	RA review/sign assessment report (w/ inspection plan)		N/A. RA (or 0350 Panel Chairman) review/ sign 0350-related correspondence
	Annual Public Meeting	SRI or BC Meet with Licensee	BC or DD Meet with Licensee	RA (or designee) Discuss Performance with Licensee	RA or EDO Discuss Performance with Senior Licensee Management		N/A. 0350 Panel Chairman conduct public status meetings periodically
	Commission Involvement	None	None	None	Plant discussed at AARM	Commission Meeting with Senior Licensee Management	Commission meetings as requested, restart approval in some cases.
	INCREASING SAFETY SIGNIFICANCE ---------->						

Note 1: Other than the CAL, the regulatory actions for plants in the Multiple/Repetitive Degraded Cornerstone column and IMC 0350 column are not mandatory agency actions. However, the regional office should consider each of these regulatory actions when significant new information regarding licensee performance becomes available.
Note 2: The IMC 0350 Process column is included for illustrative purposes only and is not necessarily representative of the worst level of licensee performance. Plants under the IMC 0350 oversight process are considered outside the auspices of the ROP Action Matrix. See IMC 0350, "Oversight of Operating Reactor Facilities in a Shutdown Condition with Performance Problems," for more detail.

Agency Action Review Meeting

- Annual Meeting Held with NRC Executive Management to Discuss Plants in Columns 4 and 5 of the Action Matrix
- Meeting is a Confirmatory Review of the Action Matrix Results
- Major Discussion Items Include:
  -Reactor Plant Performance and Review of NRC Actions
  -Reactor Oversight Process Self-Assessment
  -Analysis of Reactor Industry Trends
  -Discussion of Fuel Cycle and Other Material Facilities

ROP Challenges

- Assessment of Safety Culture
  - Currently reviewing practices to incorporate into ROP
- Proper Number and Scope of Inspections
  - Add/Shed process being developed
- Cross-Cutting Issues
  - Human performance, problem identification and resolution, safety-conscious work environment

ROP References
Inspection Manual Chapters

- IMC 305, Operating Reactor Assessment Program
- IMC 307, Reactor Oversight Process Self-Assessment Program
- IMC 308, ROP Basis Document
- IMC 350, Oversight of Operating Reactor Facilities in a Shutdown Condition with Performance Problems
- IMC 608, Performance Indicator Program
- IMC 609, Significance Determination Process
- IMC 612, Power Reactor Inspection Reports
- IMC 1245, Qualification Program for the Office of Nuclear Reactor Regulation Programs
- IMC 2515, Light-Water Reactor Inspection Program -- Operations Phase
- Website address - http://www.nrc.gov/reading-rm/doc-collections/insp-manual/manual-chapter/index.html