U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

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Office of Nuclear Reactor Regulation

Reactor Oversight Process

Reactor Oversight Process Framework

The U.S. Nuclear Regulatory Commission's (NRC's) Reactor Oversight Process (ROP) is the agency's program to inspect, measure, and assess the safety and security performance of commercial nuclear power plants. It also responds to any decline in performance. The ROP monitors plant performance in three key areas.

KEY AREAS

Reactor Safety
Avoids accidents and reduces the consequences of accidents if they occur

Radiation Safety
Protects both plant workers and the public from unnecessary radiation exposure during routine operations

Safeguards
Protects the plant against sabotage or other security threats

CORNERSTONES

Initiating Events
Focuses on limiting the occurrence of the events that could disrupt plant operations and challenge safety functions

Mitigating Systems
Monitors the function of the plant's safety systems designed to reduce the effects of initiating events

Barrier Integrity
Monitors the design barriers (fuel cladding, reactor coolant system, and containment) that protect the public from radionuclide releases caused by accidents or events

Emergency Preparedness
Measures the effectiveness of the plant staff to carry out emergency plans to respond effectively to a possible accident

Occupational Radiation Safety
Monitors the effectiveness of the plant's program to protect the workers' health and safety from exposure to radiation from radioactive material

Public Radiation Safety
Monitors the effectiveness of the plant's program to protect public health and safety from exposure to radioactive materials released into the public domain

Security
Monitors the plant's physical protection systems and ability to defend the plant against attack

CROSS-CUTTING AREAS

Human Performance
Monitors the licensee's decisionmaking process, availability and adequacy of resources to ensure nuclear safety, coordination of work activities, and personnel work practices

Problem Identification and Resolution
Monitors the licensee's corrective action and operating experience programs, and the licensee's self and independent assessments

Safety-Conscious Work Environment
Monitors an environment in which workers feel free to raise nuclear safety concerns without fear of harassment, intimidation, retaliation, or discrimination

Plant Assessment

The NRC's plant evaluations are based on two distinct inputs:
- **findings from the NRC's inspection program**
- **performance indicators (PIs) reported by the licensee**

The NRC gives both PIs and inspection findings a color designation based on their safety significance.

Green:	very low safety significance (for findings), expected performance (for PIs)
White:	low-to-moderate safety significance
Yellow:	substantial safety significance
Red:	high safety significance

NRC Response to Plant Performance

The NRC determines its regulatory response in accordance with an Action Matrix that objectively ranks plant performance based on the significance of the inspection findings and PIs. The action matrix commands an increased NRC oversight as licensee performance declines.

Increasing Safety Significance

ROP Action Matrix Assessment of Plant Performance	NRC Response
Column 5. **Unacceptable Performance**	Response at Agency Level
Column 4. **Multiple/Repetitive Degraded Cornerstone** Repetitive degraded cornerstone, multiple degraded cornerstones, or multiple **YELLOW** inputs, or one **RED** input	Response at Agency Level • Meeting with NRC Executive Director for Operations and senior plant management • Plant operator improvement plan with NRC oversight • NRC team inspection focused on performance issues at the site • Demand for Information, Confirmatory Action Letter, or Order
Column 3. **Degraded Cornerstone** One degraded cornerstone (two **WHITE** inputs or one **YELLOW** input or three **WHITE** inputs in any strategic area)	Response at Regional Level • Meeting with NRC regional management and senior plant management • Plant operator self-assessment with NRC oversight • Additional NRC inspections focused on cause of degraded performance
Column 2. **Regulatory Response** No more than two **WHITE** inputs in different cornerstones	Response at Regional Level • Meeting with NRC and plant management • Plant operator corrective actions to address **WHITE** inputs • NRC inspection to follow up on **WHITE** inputs and corrective actions
Column 1. **Licensee Response** All performance indicators and cornerstone inspection findings **GREEN**	Normal Regional Oversight • Routine inspector and staff interaction • Baseline inspection program • Annual assessment public meeting

Increasing Regulatory Oversight

Communications

The NRC assesses plant performance continuously and communicates assessment information through the performance summary public Web site for each plant. Information available through the plant's Web site includes the following:

- **quarterly performance indicator data**
- **significant inspection findings**
- **inspection reports**
- **assessment letters**

Recent ROP Activities

Risk-Informed Framework for New Reactors: evaluating potential methods for determining the significance of inspection findings and appropriateness of PIs for new reactors.

ROP Enhancements

- **Baseline Inspection Program Review:** evaluating the adequacy and scope of the baseline inspection program.
- **Assessment Program Review:** enhancing the assessment program to ensure appropriate NRC response to licensee performance.
- **Communications Improvements:** revising and developing communication products for public outreach about the ROP.

Safety Culture Common Language Initiative: incorporating language developed by industry and the NRC on safety culture into ROP guidance documents.

ROP Independent Review: assessing the program's objectives and implementation.

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