

Where is the PB in RIPB?

A SHARING OF
PERSPECTIVES...
MORE DISCUSSION
THAN PRESENTATION

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In the Beginning...

NRC's Oversight Regime (pre-1998)

- Systematic Assessment of Licensee Performance (SALP)
- Enforcement of compliance with prescriptive regulations

“Nuclear Regulatory Review Study,” Towers Perrin Report (1994)

NRC's “Near Death Experience” (1998)

- Testimony by Joe Colvin before Senate EPW Subcommittee
- Staff Requirements Memorandum for SECY-98-144
- Defined terminology around Determinism vs Risk and Prescription vs Performance

Reactor Oversight Process (ROP, implemented in 2000)

- Risk-informed and performance-based inspection and assessment process



What does Performance-based mean?

What are the attributes of a performance based-approach?

- (1) Measurable (or calculable) parameters (i.e., direct measurement of the physical parameter of interest or of related parameters that can be used to calculate the parameter of interest) exist to monitor system, including facility and licensee, performance...
- (2) Objective criteria to assess performance are established based on risk insights, deterministic analyses and/or performance history...
- (3) Licensees have flexibility to determine how to meet the established performance criteria in ways that will encourage and reward improved outcomes...
- (4) A framework exists in which the failure to meet a performance criterion, while undesirable, will not in and of itself constitute or result in an immediate safety concern.

Why is performance-based critically important?

- Achieves high levels of safety performance without undue regulatory burden

Practical Implementation of a Performance-based Approach

1. Observable parameters (quantitative, qualitative, or combination) directly related to outcome are developed
2. Objective acceptance criteria for each of the parameters is developed.
3. A decision-making framework is developed for evaluating and assessing physical and temporal margins.
4. Flexibility is afforded to the licensee to show that the margins are being employed to improve outcomes.

Regulatory Modernization

Construction Reactor Oversight Process (cROP, developed late 2000s, early 2010s)

- Focus on enforcement of compliance
- No performance indicators

Licensing Modernization Project, NEI 18-04 (2018)

Nuclear Energy Innovation and Modernization Act of 2019 (NEIMA)

- Mandates Risk-informed, Performance-based and Technology Inclusive Reactor Licensing Framework
- Development of incremental approach in proposed 10 CFR Part 53 rule package

Advanced Reactor Construction Oversight Process (ARCOP)

- Focus on enforcement of compliance, NRC staff receptive to feedback
- No performance indicators, NRC staff open to considering applicant proposals



How Can Modernization Be Achieved?

Commission Direction re Part 53 (SRM-SECY-23-0021)

- Disapproved inclusion of Framework B
 - Called for a less prescriptive regulation with Framework B relocate to guidance
- Disapproved codification of the quantitative health objectives (QHOs) underpinning a risk-based approach
 - Called for allowing applicants to propose a comprehensive plant risk metric (or set of metrics) and a description of the associated methodology for meeting it (or them)
- Disapproved application of consensus probabilistic risk assessment (PRA) standards
 - Called for a performance-based focus on outcomes rather than strict adherence to a checklist or specification

ARCOP and predecessor CROP

- Opportunity to optimize performance-based attributes

Impediments to Modernization

Modernization is defined by 1999 Commission Direction and Reiterated in NEIMA

- Resistance to Commission Policy Governing RIPB Since 2000
- Modernization was limited to the ROP
- Signs of backslide toward enforcement of compliance in the ROP

Conflation of RI and PB terminology central to 1999 Commission Direction and NEIMA

- NRC public meeting June 30, 2022, to align on terms, and again on July 28, 2022, to discuss NEIMA concepts
- March 27 and May 23, 2024, Advanced Reactor Stakeholder Meetings

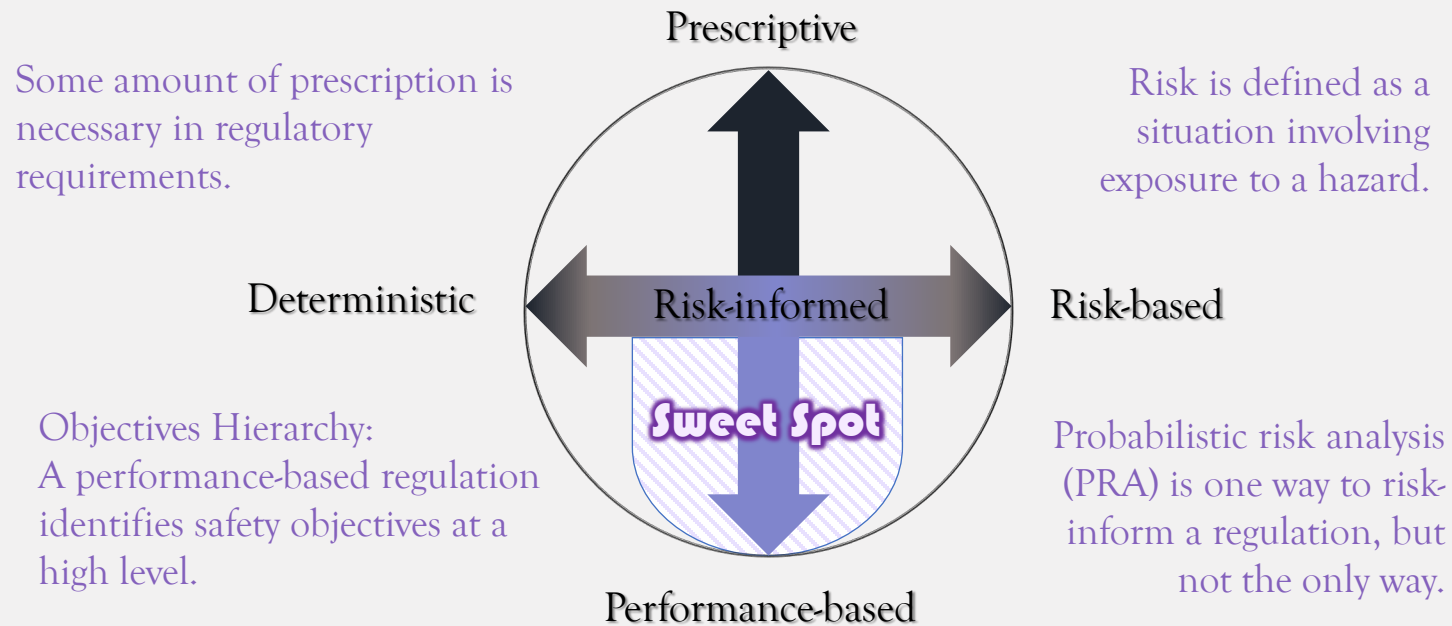
NRC's Regulatory Information Conference (RIC), March 2024

- Question about whether NRC really is performance-based and risk-informed
- Response focused primarily on risk-informed, not performance-based

Discussion...



Performance-based Independent of Risk-informed



- Attribution: RP3C CoP, July 29, 2022, “A Performance-Based Approach for 10 CFR Part 53,” Slide 8
- Attribution: RP3C CoP, August 26, 2022, “What Society Needs in 10 CFR Part 53,” Slide 6