



U.S. NRC

UNITED STATES NUCLEAR REGULATORY COMMISSION

Protecting People and the Environment

**Public Meeting on Approach to Address
SRM-12-0081 on
Risk-informing the Reactor Oversight Process
for New Reactors**

February 5, 2013



Meeting Purpose

- Kick-off discussions on how to address specific aspects of the Commission's SRM regarding risk-informing the ROP for new reactors, including:
 - Technical basis for the use of deterministic backstops and/or relative risk measures
 - Potential examples of appropriate backstops
 - The appropriateness of the existing performance indicators and the related thresholds for new reactors
 - Key messages/thoughts to consider for staff's response



Background

- SECY-12-0081, “Risk-Informed Regulatory Framework for New Reactors,” issued June 2012 to provide staff recommendations on both licensing and oversight processes
- Tabletop exercises indicated that current risk thresholds are appropriate for ROP; however, a few changes may be warranted consistent with integrated risk-informed principles in RG 1.174
- Staff recommended Option 3B; to augment existing risk-informed ROP tools with deterministic backstops to ensure an appropriate regulatory response for the new reactor designs



Commission SRM

Dated October 22, 2012

- The SRM states, in part, that the Commission has disapproved the staff's recommendation (Option 3B) related to the ROP
- The staff should give additional consideration to the use of relative risk metrics, or if the staff believes that this is not a viable option for new reactor oversight, it should provide a technical basis for its conclusions.
- The staff should provide the Commission with a notation vote paper that provides:
 1. A technical basis for the staff's proposal for the use of deterministic backstops, including examples
 2. A technical evaluation of the use of relative risk measures, including a reexamination of the pros and cons
 3. A discussion of the appropriateness of the existing performance indicators and the related thresholds for new reactors



Staff Approach

- Deliverable is a Notation Vote SECY for EDO signature in October 2013
- Involve internal and external stakeholders, including NRR/DIRS, NRO/DSRA, NRR/DRA, RES, NRO/DCIP, Regions, Industry, ACRS, and public
- Stay within scope of the request (provide technical basis and discussion) and do not try to fully develop the backstops, relative risk approach, etc.
- Provide a crisp paper with enough detail to provide the Commission the information they need to direct the staff appropriately, with supporting details in enclosures
- The LRF history and independent review portions of SRM are not within the scope of this paper



Item 1 – Deterministic Backstops

- Provide technical basis (IAW RG 1.174, etc)
- Clearly define “deterministic backstops” to reemphasize they are “risk-informed”
- Discuss SDP process for using them along with risk-based thresholds (e.g., parallel vs. series)
- Develop examples:
 - Emphasis on barrier integrity
 - Establish limits on extensive equipment outage times
 - Address repetitive or common cause equipment failures
- Note similar approach for MD 8.3 event response
- Discuss potential impact on current fleet



Item 2 – Relative Risk Measures

- Provide a technical evaluation of relative risk measures
- Evaluate impact of relative risk on 2011 SDP tabletop results, including examples
- Evaluate feasibility of relative risk metrics, or other options, that provide a more quantitative risk-informed approach
- Additional considerations/reexamination of pros and cons from 2009 white paper
- Discuss potential impact on current fleet



Item 3 – Performance Indicators

- Provide discussion of appropriateness of existing PIs and thresholds for new reactors
 - Risk-informed PIs (MSPI - brief recap from SECY-12-0081)
 - Other reactor safety cornerstone PIs (IE, MS, BI)
 - Other deterministic cornerstone PIs (EP, Public and Occupational Radiation Safety, Security)
- Note the potential use of focused inspection to address shortfalls



Key Messages/ Strategy

- Purpose of the SDP/ROP is to focus resources based on the safety significance of issues
- The staff's recommended approach should be consistent with the goal to address known performance issues in a timely manner
- Present staff recommendations and/or options based on conclusions from evaluations



Next steps

- Additional public meetings through March, as needed
- Produce draft SECY in March/April
- Draft review/concurrence in April
- Public meeting to discuss draft in May
- ACRS briefing(s) in June/July
- Revise SECY as needed in August/September
- SECY through concurrence in September/October
- SECY due to EDO October 15



**Back-up slides
to focus discussions
and take notes**



Deterministic Backstops Basis and Examples

Basis Considerations

Examples for barrier integrity

Examples for extensive equipment outage times

Examples for repetitive or common cause failures



Relative Risk Measures Advantages/Pros

Pros from 2009 white paper

- recognizes that “small increase” is a relative measure, and precludes large percent change in CDF and/or LERF for new reactors
- precludes the situation whereby new reactor PIs would be insensitive for safety systems
- precludes a situation in which inspection findings for performance deficiencies in new reactor systems would be relatively insensitive to the deficiency

Additional pros



Relative Risk Measures Disadvantages/Cons

Cons from 2009 white paper

- inconsistent with the underlying technical basis for the current absolute thresholds in RG 1.174
- could be substantial disagreement between industry and staff regarding what constitutes the “baseline” for CDF and LERF changes
- major changes to current regulatory guides and other processes required
- would result in inconsistency between existing and new reactors
- transition from the existing absolute acceptance guidelines and ROP thresholds to relative (percent changes) could be difficult
- past conditions that were deemed acceptable might not be found acceptable under the new formulation and vice versa

Additional cons



PI considerations

Additional MSPI Considerations

Other Reactor Safety PIs (IE, MS, BI)

Other Cornerstone PIs (EP, rad safety, security)