

## **NRR-DMPSPeM Resource**

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**From:** Miller, Ed  
**Sent:** Wednesday, January 24, 2018 3:25 PM  
**To:** Miller, Ed  
**Subject:** Jan 24, 2018, Public Meeting with NEI Re: New PRA Methods  
**Attachments:** NRC staff slides Jan 24 2018 Public Meeting.pdf

NRC presentation slides for the subject meeting attached.

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# Newly Developed Methods

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# Newly Developed Methods Overview

- Currently not directly addressed in ASME Standard
- RG 1.200 calls for submittal and staff review of key assumptions, i.e., key sources of model uncertainty
  - Guidance defines selecting from alternative consensus methods as key source of uncertainty when the results can be affected

# Newly Developed Methods

## Overview

- Once a LAR authorizing use of future PRA estimates is issued, acceptability of future new PRA method changes are not addressed by RG 1.200 or the current ASME Standard
- NRC review of newly developed methods can be requested with a topical, a FAQ, a LAR, or other submittal
- NRC experience has been that acceptability necessitated modifying or constraining most industry proposed new methods

# Examples of major PRA methods modified by NRC Review

- Fire escape from well-sealed robustly secured MCC cabinets > 440V
  - FAQ 14-0009 changed practice from assumption of 0 probability that fire escapes a well-sealed cabinet to a 0.23 bounding value and range of values down to 0.04 depending on types of cables within and above the cabinet.
- Weighting factors for transient and hot work fire modifications
  - Original NUREG/CR-6850 provided only three integer weighting factors
  - FAQ 12-0064 provided greater resolution without any “adjustment factors”
  - FAQ 14-0007 incorporating floor area into factors.

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# Examples of major PRA methods modified by NRC Review

- Failure of “traditional” RCP seals in original Internal Events PRA, i.e., IPE and IPEEEs in the late ‘80s and 90s.
  - Failure of RCP seal cooling leading to failure of RCP seals is an important but complex time versus leakage issue
- NRC approval of WCAP-15603 (WOG-2000) model in 2001 changed, among others,
  - Increased third stage seal failure probability given second stage has failed from 0.54 to 1.0,
  - added requirement to demonstrate capability to rapidly cool down or to change O-ring failure probability to 0.5,
  - moved initial leakage from 30 minutes to 13 minutes,

# Definitions of New Method

“A PRA method is new if it has not been reviewed by the NRC staff.” (NRC Acceptance On NEI Appendix X to Guidance 05-04, 07-12, And 12-13, Close-out of Facts and Observations (F&Os) ML17079A427)



# Acceptance of Newly Developed Methods

- Risk-Informed Steering Committee Working Group 1 (RISC WG 1) was tasked to develop guidance on newly developed methods
  - Resulted in Vetting Panel process as path forward
  - RISC WG 1 included input from staff in NRR, NRO, and RES
- Revisiting process for accepting newly developed methods would require reconvening RISC WG 1

# Future Options under Consideration for 4b

- Option 1: Improve NRC Review and approval of newly developed PRA methods (i.e., vetting panel process)
- Option 2: Develop guidance that only significant newly developed methods need to be reviewed and approved
- Option 3: Conceptual Industry Proposal for Newly Developed Methods

# Option 1: Pilot Vetting Panel Process

- Strengths:
  - Consensus approach limits resources required from both NRC and Industry
  - Resources already expended to review industry guidance and 3 pilot methods already received fee waiver
  - Provides central repository of acceptable methods (formal documents in ADAMS)
- Weakness:
  - Unclear how resource reduction over current processes can be achieved
  - Approval criteria need to be developed and added to guidance document
  - Fee waiver took several months to issue for the pilot methods

## Option 2: Limit License Condition to “Significant” Methods

- Strengths
  - Focuses review resources on significant methods and away from insignificant methods
  - Less resource burden on both NRC and industry
- Weaknesses
  - Significance difficult to define (e.g., %, risk metric)
  - Significant would likely vary from plant to plant
  - Cumulative effect will also be difficult to include

## Option 3: Conceptual Industry Proposal for Newly Developed Methods

- Peer Review of PRA upgrades (includes newly developed methods). Licensee provides summary of scope of upgrades to NRC before use
- Necessitates a framework that does not currently exist
  - Undefined criteria and timeline regarding reporting, and NRC review, acceptance, and non-acceptance
  - Fee schedule would have to be established (Licensee pay for the review, would licensee request a fee waiver, etc.?)
  - Undefined NRC/Licensee interaction after (possibly delayed) determination of un-acceptable methods

# Summary

- PRAs are increasingly important in the licensing bases (4b, 50.69)
- NRC needs reasonable confidence that plant PRAs will retain technical acceptability in the future
- A license condition that only allows use of NRC accepted PRA methods will provide this confidence
- Addressing unreviewed and unacceptable methods after implementation requires investigation
- Options 2 and 3 will require resources to develop and reconvening RISC WG 1 to establish framework
- Industry should provide justification for the expenditure of NRC resources