Risk-Informed, Performance-Based Regulation

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May 3, 2006

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Progress to Date

- Risk-informed, performance-based approaches have been demonstrated to be effective
- Successful applications have included
  - Revised reactor oversight process
  - Maintenance rule
  - Mitigating Systems Performance Index
- Plant safety, reliability, and economic performance have been sustained at high levels

Current Situation

- Momentum for progress of important risk-informed rulemakings has slowed significantly
  - Implementation of the direction provided by the Commission in response to SECY-98-300 is taking far too long
  - Safety and efficiency enhancements desired by both the NRC and industry are impacted
- Purpose of briefing is to provide examples and identify success path

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1995 NRC PRA Policy Statement

- PRA methods should complement the NRC's deterministic approach
- Focus attention and resource allocation to areas of true safety significance
- Implement in a manner that promotes regulatory stability and enhances safety

Key Points

- Risk-informed, performance-based regulation cannot be another layer
- Strong change management needed to regain momentum
- Industry will focus on internal events, at-power PRAs and fire PRAs

Implementation of §50.69 Special Treatment Requirements

- Concept began as graded quality assurance
- Initial industry/NRC meeting in August 1998
- Industry guidance and pilot of categorization process began in 2000
- South Texas exemption approved in August 2001
- Final rule approved in November 2004
- Regulatory Guidance issued in January 2006 – revision expected in May 2006

Regulatory Guide 1.201
(50.69 implementation guidance)

- Use of risk-informed process for categorization has been demonstrated
- Majority of NRC staff discussion focused on treatment of safety related, low safety significant equipment (RISC-3 SSCs)
- Recent revision to regulatory guide appears to resolve industry concerns

§50.69 Implementation

- Industry intends to submit a pilot application this year
- This is a strategic investment that should provide long term value
- Broader industry implementation is expected to follow
- Timely NRC review of industry submittals is needed to progress with implementation of 50.69

STP Exemption Implementation Summary

- STP Exemption proof-tested 50.69 concept
- Categorization completed on 94 systems
  - Number of systems driven by Station users
  - For safety-related SSCs, 75% determined to be Low Safety Significant (RISC-3)
- Categorization results enhance our focus on safety and support better-informed decisions
- Treatment proceeding in deliberate manner

§50.46a – LOCA Requirements

- Research effort began in 1999
- Industry petitioned NRC for enabling rule in 2002
- Proposed rule deferred several times from March 2004 to November 2005

Proposed §50.46a

- Significant concerns
  - New operational restrictions for old design basis events
  - New change control requirements focused on residual risk
  - Lack of stakeholder participation
- Not a viable option for licensees in its current form

§50.46a Going Forward

- Huge potential for safety enhancements and operational flexibility
- Implementation must be practical and consistent with policy direction
- Stakeholder participation would help support viability of final rule and guidance development

Future Risk-Informed Applications

- Fire Protection - Transition to NFPA-805
  - Many plants have expressed intent
  - Significant Fire PRA effort
- Part 52 Rulemaking
  - Earlier version had full scope PRA requirement
- These initiatives should incorporate lessons learned from prior efforts

PRA Tools

- Current and envisioned applications all need acceptable at-power, internal event PRA models
- NFPA-805 will need acceptable fire PRA models
- Industry will focus on the development and peer review of these PRAs

Conclusions

- Industry agrees with the Commission's policy direction
- Industry will support applications that add value
  - Safety enhancements and cost benefits
- Strong leadership and change management is needed by all parties to support implementation
- Need to ensure focus is on matters of high safety significance
- Lessons learned from §50.69 and §50.46 rulemakings should be incorporated in future risk-informed initiatives