



RIC 2011 Comprehensive Site Level 3 Probabilistic Risk Assessment (PRA)

Dan Hudson
Office of Nuclear Regulatory Research
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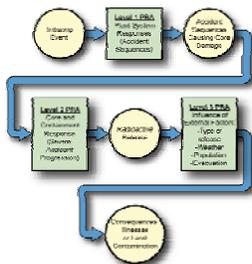
Presentation Objectives

- Provide updated information to external stakeholders about this evolving NRC staff initiative.
- Encourage external stakeholder engagement and participation in upcoming activities.

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Importance of Level 3 PRAs



Risk Characterization:

Level 1 PRA
Level 2 PRA
Level 3 PRA

Key Message:

A Level 3 PRA is required to estimate the integrated risk to the public from all hazards.

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Historical Perspective

- **Prior studies estimating risk to public**
 - WASH-740 (March 1957)
 - WASH-1400 (October 1975) } 18 years
 - NUREG-1150 (December 1990) } 15 years
- **PRA Policy Statement (August 1995)**
 - Implementation of risk-informed regulation

Key Message: Even before implementation of risk-informed regulation, the NRC set a precedent for periodically updating its understanding of nuclear reactor accident risk.



Comprehensive Site Level 3 PRA

- **NRC staff initiative based on:**
 - Advances since NUREG-1150
 - Interest in site accident risk versus reactor accident risk
- **Commission tasking**
 - Engage internal and external stakeholders in formulating plan
 - Provide options for proceeding with Level 3 PRA activities

Key Message: The NRC staff believes it is time to conduct a new site Level 3 PRA to update and improve our understanding of nuclear site accident risk.



Comprehensive Site Level 3 PRA (cont.)

- **Phase 1 – Scoping Study (FY2010-FY2011)**
- **Phase 2 – Pilot Study (start in FY2012)**
- **Phase 3 – Follow-on studies (as needed)**

Key Message: To optimize cost-benefit, the NRC staff is using a three-phased approach to conducting new Level 3 PRA activities.



Scoping Study Objectives

- **Develop options for the following aspects of a potential site Level 3 PRA pilot study:**
 - Scope of the analysis and PRA technology to be used
 - Perspectives on future uses of results
 - Site selection attributes
 - Resource estimates
- **Identify NRC staff’s recommendation for the pilot study**
- **Obtain external stakeholder support**



Potential Pilot Study Objectives

- **Update and improve our understanding of nuclear site accident risk by:**
 - Incorporating advances since NUREG-1150
 - Using a more integrated and consistent analysis approach
- **Enhance our PRA capability by:**
 - Integrating and bridging gaps between existing analytical tools
 - Developing risk analysis expertise

Key Message: This initiative is primarily an incremental improvement to existing analytical tools – **not** a large-scale developmental effort.



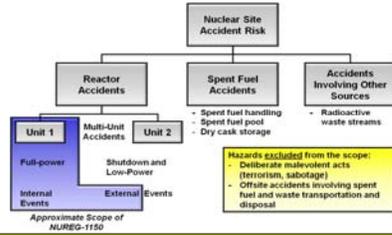
Potential Pilot Study Objectives (cont.)

- **Demonstrate feasibility of conducting lower cost integrated Level 3 PRAs**
- **Evaluate the need for follow-on studies**

Key Message: This initiative is primarily an incremental improvement to existing analytical tools – **not** a large-scale developmental effort.



Potential Pilot Study Scope



Key Message: The NRC staff is considering a more complete analysis using a better integrated and consistent approach.



Some Potential Future Uses

- Inform policymaking and rulemaking
- Focus NRC’s inspection program
- Resolution of generic safety issues
- Prioritization of safety research programs

Key Message: Much like the NUREG-1150 PRAs, the results of a new site Level 3 PRA may be used to inform a variety of future regulatory activities.



Upcoming Important Activities

- Public meeting (March 21)
- Advisory Committee on Reactor Safeguards (ACRS) Full Committee Meeting (April 7-9)
- Commission paper submission (July 7)

Key Message: External stakeholder engagement and support are needed for this important NRC staff initiative to succeed.



Contact Information

Project Manager

Dan Hudson, RES/DRA
Daniel.Hudson@nrc.gov

Work: 301-251-7919
Fax: 301-251-7424

Mail Stop: C4A07M

Technical Monitor

Marty Stutzke, RES/DRA
Martin.Stutzke@nrc.gov

Work: 301-251-7614
Fax: 301-251-7424

Mail Stop: C4A07M



Acronyms and Abbreviations

- ACRS Advisory Committee on Reactor Safeguards
- DRA Division of Risk Analysis
- NRC U.S. Nuclear Regulatory Commission
- PRA Probabilistic Risk Assessment
- RES Office of Nuclear Regulatory Research
- RIC Regulatory Information Conference
