



Technical and Regulatory Issues Facing Nuclear Power Plants – Leveraging Global Experience

World Nuclear Association Symposium 2016
Session 3C – Operating Plant Challenges

June 1st 6-7pm

Agenda – Operating Plant Challenges

- Sessions 3A and 3b address issues concerning operating plans over near and long term
- Although not obvious, these can be overlapping
- Session 3C intent - discuss these issues (and others) to determine importance and priority
- Desired end state: safe and efficient solutions

Panel

Chair: Henri Pelin, Senior Advisor, WNA

Panelists:

- Dean Townsend, Station Engineering Director, Pickering NGS, Ontario Power Generation
- Keith Moser, Vice President Global Nuclear Associates, Former Exelon Innovation Executive
- Andy Taylor, Supervisor, Entergy Nuclear License Renewal Services & Chair, NEI Working Group
- Gene Kelly, Senior Manager, Exelon PRA Applications

Some Big Issues Before Us

- Simplifying processes to free up minds and bodies
- Merging deterministic and probabilistic views
- Maintaining regulator's trust in order to "let go"
- Balancing risks of internal vs. external hazards
- Organizational embrace of risk-informed initiatives
- Lots of good ideas ... limited resources available

Thoughts on Processes

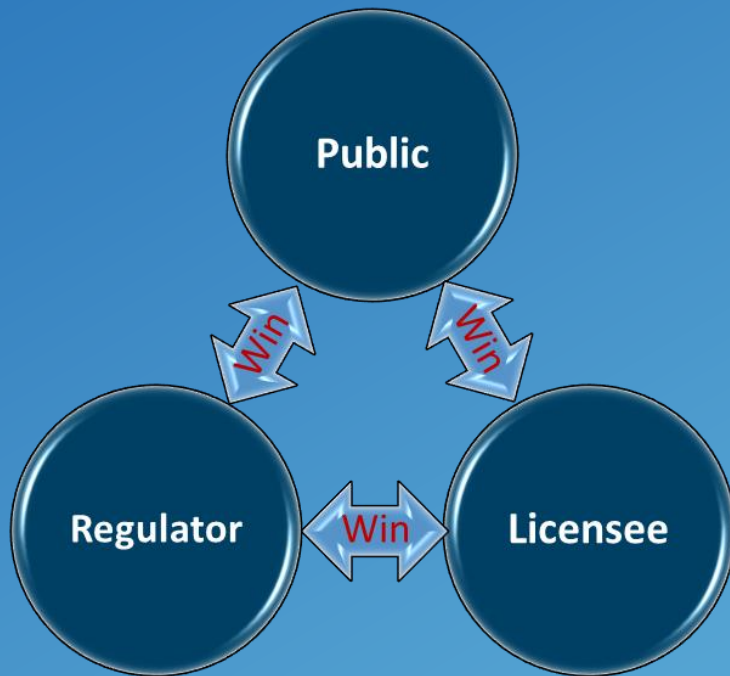
“Pursuit of perfection in process is the ultimate enemy of quality”

- These evolve (and grow) over time ... many reasons
- Simple concepts and requirements (e.g. design control, corrective action) that become complex
- Complex designs are less safe; more can go wrong
- It doesn't need to be perfect ... less is better

People versus the Machine

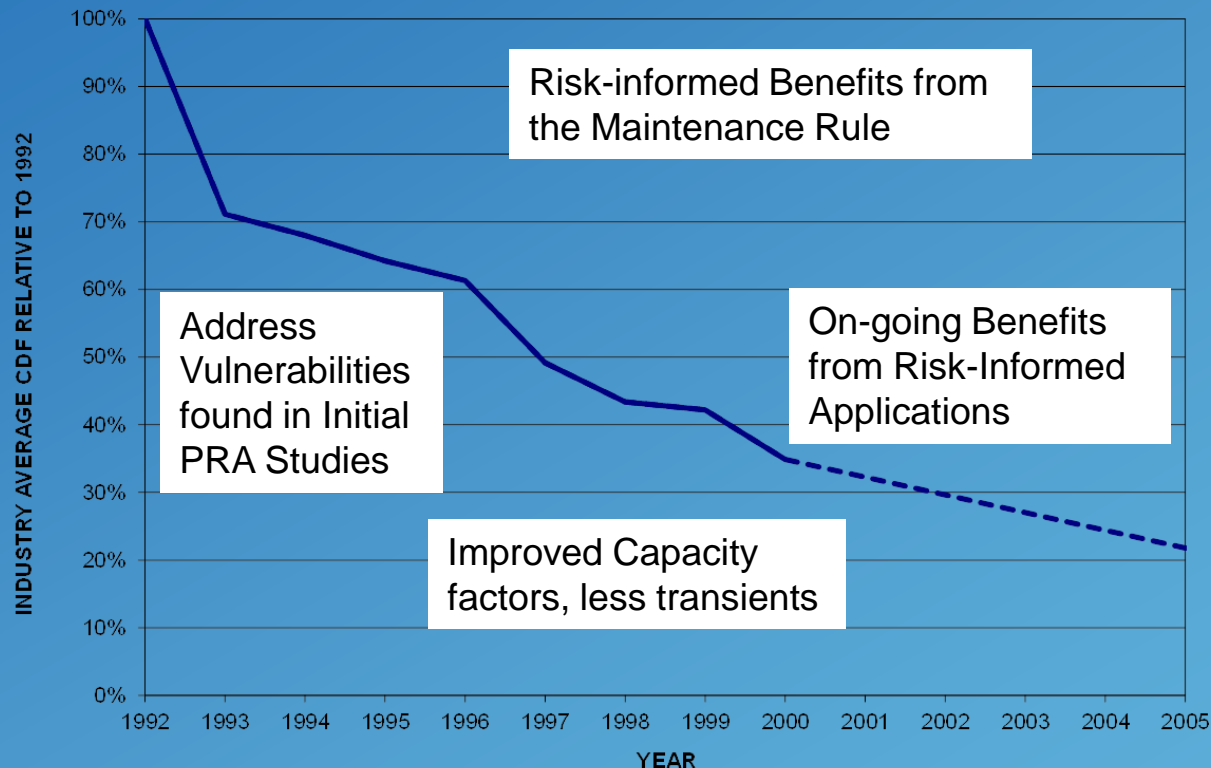
- Initial focus on the design - redundancy, diversity, defense in depth, safety margin, single failure
- Human action not historically credited
- Advances in human reliability ... procedures, training, human factors, simulator, safety culture
- PRA models allow more rigorous analysis of human performance and a focus on risk-significant actions

Risk-Informed Foundation



- Focus on safety significant equipment and issues
- Tangible (measurable) improvement in safety
- Operational flexibility for operators within limits
- Realistic, complete, with consideration of uncertainty

PRA allows us to measure safety ...



Ref. – Data from EPRI, “Safety and Operational Benefits of Risk-informed Initiatives”, 1016308, February 2008

Safe and Efficient Solutions ... some ideas

- Benchmarking and Self Assessment
- Constructive challenge as risk management practice
- Dramatic Change Management ... reduce and simplify
- Continuous Improvement ... never stop learning