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***A suggestion to enhance RR  
Licensing Effectiveness and  
simultaneously “Burden Reduction”***

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## BIBLIOGRAPHY

- **1. C.C.Chandler, *Recent Developments in Licensing and Regulation at the Nuclear Regulatory Commission*, *Administrative Law Review*, 486, (2006).**
- **2. T. Poindexter, *"Burden Reduction" Strategies for 50 Non-Power Licensees*, TRTR, Mc-Master University, Hamilton, Canada, (2003)**



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## Introduction

- In 1995 the US NRC announces the initiative, to accept the use of PRA techniques in all areas of nuclear power regulation[1] as a complimentary proof of safety for Power Reactor renewing licensing.
- Five years latter, in October 2000, the NRC issued the first complete version of its Risk-Informed based regulation plan for Power Reactors, and two years latter, the DOE unveiled its Nuclear Power 2010 initiative, emphasizing the importance of the Performance - Based regulatory solution.
- The following presentation is a brief suggestion how to improve licensing efficiency and reduce financial burdens by combining probabilistic analyses to the traditional deterministic approach for RR licensing and relicensing.



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## Regulatory Framework – the dilemma

□ Regulators key role is to define the basic level of acceptable safety performance, by maintaining the highest level of nuclear and occupational safety, in order to preserve public and workers health and protect the environment.

□ Nevertheless, US *Atomic Energy Act* advises that for Non-Power reactors : *"The Commission is directed to impose only such minimum amount of regulation of the licensee as the Commission finds will permit the Commission to fulfill its obligations under this Act to promote defense and security and to protect the health and safety of the public and will permit the conduct of widespread and diverse R&D development... "*

□ The solution: Exemption for Non-Power reactors in 10CFR:  
1) Access Authorization(&11.11), 2) Fitness for Duty Program(&26.2),  
3) Decommissioning Plan(&50.75), 4) Physical Protection(&73.6),  
5) Licensing termination Obligations(&50.82) etc...



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## **Regulatory Framework – the dilemma (cont.)**

- **Some Regulatory issues can drive cost unnecessarily due to:**
  - a) Excessive prescriptive regulatory requirements,**
  - b) Lack of clear standards for safety and irrelevant oversight.**
  - c) No credit for probabilistic analyses and performance record.**
  
- **Nevertheless, Regulation must not be allowed to be compromised by economic considerations.**

**?**



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## Operator's contribution to "close the gap"

- ❑ Knowledge of regulations/plant licensing basis.
- ❑ Knowledge of specific Regulator (i.e. NRC) positions on regulatory relaxation.
- ❑ Knowing the differences between regulatory approaches:
  - a. COMPLIANCED based
  - b. RISK-INFORMED based
  - c. PERFORMANCE based



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## Regulatory Approaches (For Power Reactors):

- **COMPLIANCE based** – traditional prescriptive, including safety margins into plant design requirements for preventing or mitigating accidents, i.e.:  
**Verbatim compliance, Minimal variability, No middle ground**
- **RISK INFORMED based-** decision making that weights empirical risk data along with other factors in order to guide attention to specific designs/operation issues that poses a greater risk to public safety.
- **PERFORMANCE based** – incorporating operating experience and risk analysis into the regulatory process and strongly **result oriented**



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## **“Burden Reduction – Risk Informed Approach**

**Elements to use a risk-informed approach for reducing unnecessary regulatory burden:**

- 1. Probabilistic risk assessment (PSA).**
- 2. Analysis demonstrating low risk significance of specific systems/subsystems/components.**
- 3. Development of less prescriptive-generic requirement (suggested by the Operator)**
- 4. Interaction with the Regulator to validate the Risk Informed analyses.**



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## **Suggestion to the Agency:**

**Promoting the Regulatory “Burden Reduction” process for Licensing and Re-Licensing RR, by adopting the Risk-Informed based + Performance based probabilistic analyses to be complimentary to the Compliance based process.**



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**THANK YOU!**