Multinational Design Evaluation Program – Status Update

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MDEP

MDEP Background

- Initial concept developed by NRC – July 2005
- U.S. vision of MDEP presented during IAEA General Conference – September 2005
- Refined vision of MDEP presented to Senior Regulators during Senior Regulators Conference – Moscow, February 2006

MDEP Stage 1 Overview

- Enhanced international cooperation within existing regulatory frameworks and bilateral agreements
- Currently focused on the regulatory design review of the AREVA EPR
- Consideration being given to expansion of Stage 1 to include regulators from other countries and other reactor designs?

MDEP Stage 1 – Ongoing Activities

- Specific technical areas have been selected for enhanced cooperation between regulators (digital I/C, severe accident assessments, security issues)
- Sharing of licensee submittals and regulatory safety assessments
- Inspector exchange (construction/manufacturing)

Related Topic

- Development of a framework document that would guide regulators on the use of existing design reviews/safety evaluations?
  - regulatory requirements comparison (incorporate insights from MDEP Stage 2)
  - design comparison
  - gap analysis
  - validation
- Possible IAEA initiative?

Benefits of Stage 1 Cooperation

- Early identification of important technical issues
- Increased regulatory efficiency through leveraging of technical reviews
- Enhanced safety through cooperation of international safety experts
- Sets the stage for enhanced post-licensing international cooperation

MDEP Stage 2 Overview

- Expansion of the MDEP concept to further cooperation among regulators with respect to the design review activities associated with new reactors (including Generation IV)
- Each national regulatory authority retains sovereign responsibility for reactor licensing in their respective country
- Great Britain, France, Finland, China, South Korea, Japan, South Africa, Russia, Canada, and U.S. participating

MDEP Stage 2 Structure

- Terms of Reference Endorsed – Sept 2006
- One year pilot program near completion
- NEA acting as secretariat
- IAEA participating

MDEP Stage 2 Pilot Program

- Assessment of similarities and differences in the regulatory requirements (including safety goals) and regulatory practices in several areas
  - Emergency Core Cooling System Performance
  - Severe Accidents
  - Digital Instrumentation and Control

- Assessment of similarities and differences in the regulatory requirements and regulator practices associated with the manufacture of Class 1 mechanical components (pumps, valves, piping, pressure vessels)

MDEP Stage 2 Pilot Program– Key Topics Under Discussion

- Continued efforts to converge regulations, codes, and standards in specific technical areas
- Enhanced regulatory cooperation in selected areas even without additional convergence
- Consideration of an enhanced regulator led program to focus on the creation of internationally accepted regulatory design requirements for Generation IV reactors

Design Requirement Considerations For Generation IV Reactors

- Establishment of high level safety goals
- Development of risk informed approach
- Potentially technology neutral
- Integration of safety and security considerations
- Development timeframe commensurate with Generation IV program milestones

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