

6th INPRO Dialogue Forum on Global Nuclear Energy Sustainability: **Licensing and Safety Issues for Small and Medium-sized Nuclear Power Reactors (SMRs)**

29 July - 2 August 2013

IAEA Headquarters, Vienna, Austria

Day 1

Panel Discussions:

Licensing and Safety Issues for SMRs

Panelist: Dr. David Newland,
Canadian Nuclear Safety Commission

Some regulatory perspectives on:

- **Challenges and issues for SMR early deployment and licensing**
- **Lessons Learned from the Fukushima accident for SMRs**
- **International cooperation by regulators on SMR licensing and safety**

Regulatory Challenges and Issues for Early Deployment (1)



Regulatory and licensing framework needs to be sufficiently broad to address technologies being considered

- In Canada, proponents are considering many designs, small to large, traditional to Generation IV – a big challenge!

For existing in-service fleet: requirements, codes and standards were developed over a long period of time and evolved with experience

- Non-iPWR SMRs will not likely be able to rely on these codes & standards to a large degree – a need new standards?
- What is the burden of proof needed for novel applications of technology? Example: long term reliability of reactor coolant pumps for lead-cooled reactors
- Validation and verification of safety analysis computer codes for SMRs – what research and development is needed? Timeline?

There is a need to work towards regulatory positions on:

- Issues around cyber security and instrumentation and control design (e.g. for autonomous operation with remote monitoring and intervention in very small SMRs)
- Severe Accident Mitigation for different technologies
- Acceptable passive features and forms of inherent safety
- Regulatory language is not the same in every country – for example do we all have a common understanding of “inherent safety”
- How design can further complement emergency planning?

Should aim for common regulatory positions whenever possible

Even if a facility can be shown to be inherently / passively safe:

- **Perception = reality** for the public
 - Emergency planning still has a key role in defence-in-depth
 - All stakeholders have a role in ongoing communication – licensee, regulator, all levels of government
 - Licensee must be the first point of contact for key information during a crisis
- Need to have a clear picture of where operating procedures end and emergency procedures begin (e.g. SAMG)?
- Design Extension Conditions: need to better understand how and which parts of the plant will need to perform beyond their normal design function

Regulators working together can be more effective and efficient

But... each regulator is accountable to the Member State's public –
Each regulator must demonstrate due diligence

Regulators must be “intelligent customers” too – “Trust-But-Verify” applies
even when using review results of another regulator and its Technical
Support Organisations

A regulatory cooperation framework would be beneficial for SMRs

- How to build on MDEP experience?
- How effective can such a forum be with a much larger number of potential designs and interested member states?
- Focus on common SMR regulatory issues or specific technology issues?
- How do embarking nations contribute to such a forum?