



RIC 2011


Update on IRSN Nuclear Safety Research

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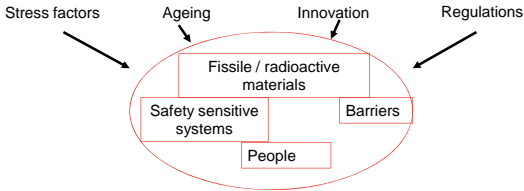
March 9th, 2011

Presentation outline


- IRSN's vision on the contribution of research to optimizing and harmonizing nuclear safety achievements worldwide
- Key areas of IRSN investment in research
- Current R&D programme trends and priorities
- conclusion

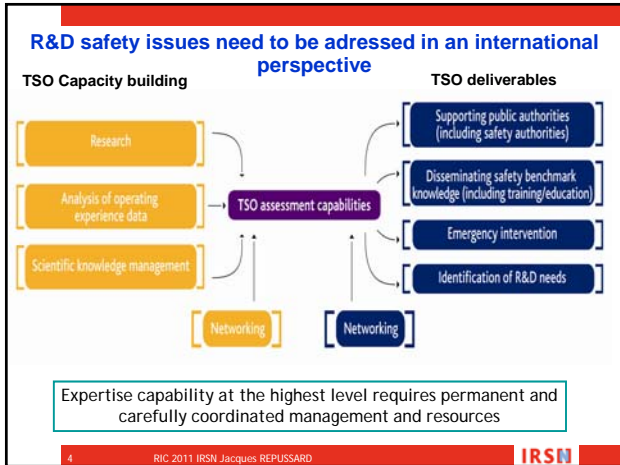
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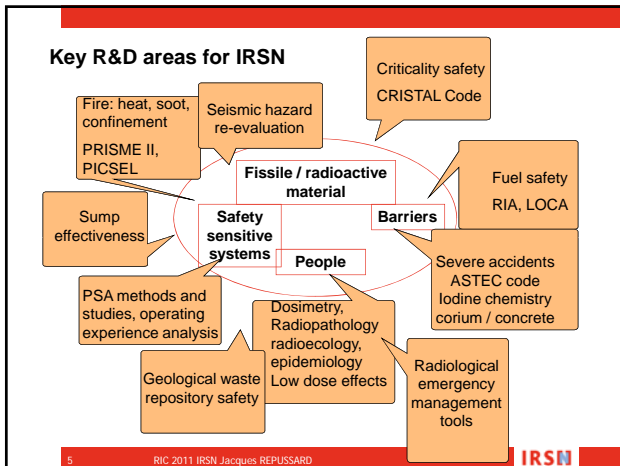
R&D safety issues need to be addressed in a holistic perspective...



... to help answer the central question: is the proposed safety demonstration for this nuclear reactor / facility acceptable, in the light of state of the art knowledge ?

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- ### IRSN R&D Trends (1)
- **Going systematically international**
 - EU strategic Research Agendas
 - NEA / CSNI Strategic Plan
 - Key bilateral relationships
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NEA/CSNI: a key instrument for multilateral cooperation

- IRSN is strongly involved in the CSNI activities, aimed at maintaining/advancing the scientific and technical knowledge base of the safety of nuclear installations
- CSNI recently approved its new Strategic Plan (in conjunction with CNRA) and Operating Plan for the period 2011-2016
- CSNI intends to maintain/develop cooperative research projects, shared data bases and initiatives in terms of knowledge transfer
- Main focus areas for the coming years
 - Long term operation of reactors
 - Advanced methods/tools for accident analyses
 - Impact of new technologies
 - Assessment of safety margins
 - Safety culture, human & organisational factors
 - PSA, risk-informed safety approaches
 - Methods/tools for advanced reactors safety assessment

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IRSN R&D Trends (1)


- Going systematically international
 - EU strategic Research Agendas
 - NEA / CSNI Strategic Plan
 - Key bilateral relationships
- Addressing the need to clarify safety demonstration expectations for new build PWR reactors, in the light of WENRA agreed *safety performance objectives*, and of state of the art nuclear safety knowledge
- Tapping the resource from *fundamental science developments*, through association with Universities
- Better understanding the longer term evolution of *safety margins and uncertainties concerning the existing reactor fleet*
- More attention to *safety culture, knowledge management and transfer* to new generations (development of ENSTTI)

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IRSN R&D Trends (2)

- *Major Experimental facilities will remain essential: CABRI reactor (RIA and LOCA R&D), MIDAS Project, Waste Repository Lab, radiobiology labs, neutron dosimetry (AMANDE),...* 
- *Reducing* efforts on severe accident research, but developing ASTEC and SARNET, PWR SOFIA simulator
- *Increasing* efforts on:
 - Human and organisation related risk factors
 - Materials, components and systems ageing
 - Digital I&C
 - GEN IV and ITER (Fusion) reactor safety features
 - Understanding low dose effects (below 100msv)
 - Understanding the economics of nuclear safety

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Conclusion

- Nuclear safety is fundamentally science based
- The cooperative development of nuclear safety science is a powerful harmonization instrument, in response to the globalization of the industry
- The cooperative development of nuclear safety science also makes sense from a public budget point of view:
 - Sharing major experimental infrastructures
 - Sharing rare expertise capabilities
 - Sharing knowledge and training capabilities
- Nuclear safety R&D needs to anticipate future (not yet explicit) regulatory needs, with adequate strategic agendas.
