

# International Conference on Human and Organizational Aspects of Assuring Nuclear Safety –Exploring 30 Years of Safety Culture



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## Institutional Strength in Depth

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### Synopsis

Much work has been undertaken in order to identify, learn and implement the lessons from the TEPCO Fukushima Dai-ichi nuclear accident. These have mainly targeted on engineering or operational lessons. Less attention has been paid to the institutional lessons, although there have been some measures to improve individual peer reviews, particularly by the World Association of Nuclear Operators, and the authoritative IAEA report published in 2015 brought forward several important lessons for regulators and advocated a system approach. The report noted that one of the contributing factors the accident was the tendency of stakeholders not to challenge. Additionally, it reported deficiencies in the regulatory authority and system. Earlier, the root cause of the accident was identified by a Japanese independent parliamentary report as being cultural and institutional. The sum total of the institutions, the safety system, was ineffective

While it is important to address the many technical and operational lessons these may not necessary address this more fundamental lesson, and may not serve to provide robust defences against human or institutional failings over a wide variety of possible events and combinations.

The overall lesson is that we can have rigorous and comprehensive safety standards and other tools in place to deliver high levels of safety, but ultimately what is important is the ability of the nuclear safety system to ensure that the relevant institutions diligently and effectively apply those standards and tools –to be robust and resilient. This has led to the consideration of applying the principles of the strength in depth philosophy to a nuclear safety system as a way of providing a framework for developing, assessing, reviewing and improving the system.

At an IAEA conference in October 2013, a model was presented for a robust national nuclear safety system based on strength in depth philosophy. The model highlighted three main layers: industry, the regulator and stakeholders. Crucial elements in the model included the interactions between the various layers and an underlying commitment of all players to strong leadership for nuclear safety (involving openness, transparency, accountability and challenge), and the nurturing of safety cultures in all. This has since been explored in more detail by INSAG, and various crucial components have been investigated at Cambridge University and elsewhere. This talk presents an update on this work in the context of the recent authoritative IAEA report.

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