Summary and future needs

Joint NKS-R and NKS-B Seminar, Stockholm, January 13, 2016

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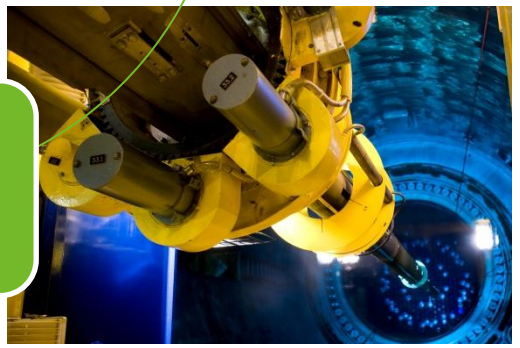
Summarized impressions from these two days

- **Fukushima did not turn the nuclear safety fundamentals upside down**
  - Rather, the events highlighted the profound importance of **Defence-in-Depth** in nuclear safety: prevention, mitigation, and emergency response
  - Also, the significance of designing the plant for a wide range of relevant **internal and external** initiating events was made evident
  - In Finland, measures have been taken to prepare the plants for severe accidents a long time ago. Therefore, the Fukushima stress test findings didn't lead to massive changes.
  - Naturally many learnings: Increased focus on very long-term accident management, multi-unit accidents, heat removal from fuel pools etc.
- **Most interesting research topics in nuclear safety going forward**
  - PRA level 3 methodologies, not yet as mature an area as level 1 or even level 2. The time is right!
  - Safety of new kinds of nuclear power plants for the future: Passive safety features (both for large plants and SMRs), simplification potential and impact on safety of SMRs, licensability of SMRs
  - Safety issues of extended long-term operation up to e.g. 80 years: phenomena, configuration management etc.

The Nuclear Business Environment

Safety

Political and regulatory framework



Availability

Cost control

A graded approach to nuclear safety is necessary

- Maintaining a high level of nuclear safety is the basis for all nuclear activities.
- Especially in the aftermath of the Fukushima accident, more and more stringent nuclear safety measures and regulations have been adopted at national and EU level
  - The Fukushima accident brought up safety issues to which even more attention need to be paid, and therefore new requirements have been introduced
  - Fulfilling them naturally generates costs for the industry. This together with the historically low wholesale electricity prices – and, in Sweden, a very significant nuclear-specific tax – creates a challenge for the competitiveness of nuclear energy.
- If the trend with increasing costs and low wholesale electricity prices continues, the risk for nuclear power plants to become clearly unprofitable and prematurely phased out is growing
- Important to utilize a graded approach with regard to new safety measures and select such proposals to be implemented, which clearly enhance nuclear safety and have a proven added value
- It is equally important that the graded approach and proportionality are kept in mind also when applying regulations
  - Regulation should not define the design in detail but leave some room for pragmatic engineering solutions.
  - Instead of very detailed requirements, defining overall safety level and safety requirements shall be enough