International Conference on
Topical Issues in Nuclear Installation Safety
Safety Demonstration of Advanced Water Cooled Nuclear Power Plants

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Vienna, Austria

Organized by
IAEA
60 Years
Atoms for Peace and Development
Closing Plenary

Summary of the Conference: Insights and Recommendations

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Contents

• Overview
• Key Outputs
  – Plenaries
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Overview

• Conference programme
  – 27 technical sessions organised in 3 parallel tracks
  – 18 poster presentations
  – exhibition

• High level plenaries on
  – The Vienna Declaration on Nuclear Safety: Objectives, Challenges and Prospects
  – Insights Gained from Design, Construction and Commissioning of Advanced Water Cooled Reactors

• Several side events
Participation (2/2)

FRANCE: 32
UNITED STATES OF AMERICA: 31
GERMANY: 14
CHINA: 14
RUSSIAN FEDERATION: 14
CZECH REPUBLIC: 11
JAPAN: 10
Plenary 1

- Vienna Declaration on Nuclear Safety (VDNS): Objectives, Challenges and Prospects
  - Consensus: IAEA Safety Standards cover objectives of VDNS
  - Member States request further support implementing new design safety requirements
  - Bottom up approach recommended for sharing experiences and practical approaches regarding safety improvements for existing NPPs
Plenary 2

- Insights Gained from Design, Construction and Commissioning of Advanced Water Cooled Reactors
  - challenges in design, manufacturing and construction
    - complexity
    - design changes
  - supply chain quality and availability
  - well established regulatory framework
Side Events

• Member States encouraged to benefit from Technical Safety Review (TSR) Services
• Independence between design developer and reviewer emphasized
• Expertise in safety assessment for newcomer countries necessary
• Systematic approach needed to identify and justify Design Extension Conditions
• International harmonization of design safety requirements for SMRs desired
Topical Issues

Safety Assessment of advanced reactor designs

Design safety principles

Licensing of advanced reactor designs

Safety reinforcement of existing installations
Topical Issues

Safety Assessment of advanced reactor designs
Key Outputs

• Common approach needed to assess reliability of passive systems

• Fora for discussion on approaches to demonstrate safety in core melt scenarios recommended

• Development and verification of safety demonstration tools a priority for Member States

• Quality PSA recommended to enhance design
Topical Issues

Design safety principles
Key Outputs

- Further guidance needed to address “practical elimination” and its demonstration
- Importance of assessing the implementation of defence in depth in design highlighted
- Review of the applicability of IAEA Safety Standards to SMR design requested
Topical Issues

Licensing of advanced reactor designs
Key Outputs

• Internationally accepted method to evaluate new design features desired
• Consideration for multi-unit interactions recommended (e.g. SMRs)
• Sharing of experiences in licensing of passive systems recommended
Topical Issues

Safety reinforcement of existing installations
Key Outputs

• Further improvements to severe accident management programs recommended
• Sharing experiences with backfitting existing NPPs to meet the Vienna Declaration to the extent practicable
• Further clarification on the terminology of the VDNS desired
Recommendations

• Member States to share experiences and practical approaches (e.g. VDNS, evaluation of new design features); IAEA to provide fora

• IAEA to facilitate application of new design safety principles (also related to SMRs)

• IAEA to collect regulatory and industry experience and lessons, positive and negative (e.g. New build Projects)

• IAEA to support harmonisation, verification & validation, common approaches