International Conference on the challenges faced by TSOs in enhancing nuclear safety and security

Tokyo, Japan, 25-28 October 2010

OECD/NEA activities to promote cooperation on nuclear safety assessment and research

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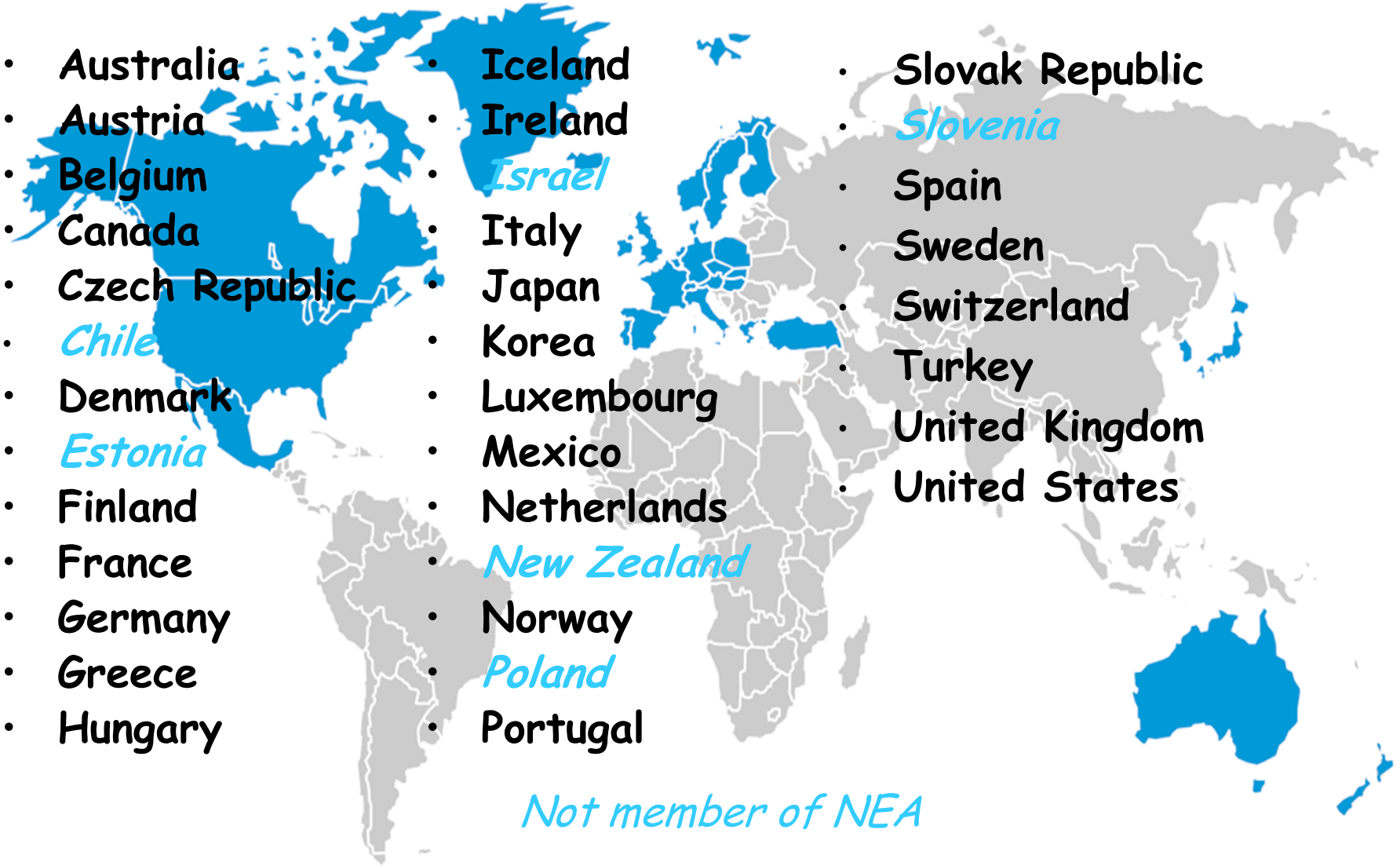
Outline

- NEA/CSNI
- Task on Advanced Reactors Facilities (TAREF)
- Joint Projects
- Long Term Operation (LTO)
- Multinational Design Evaluation Programme (MDEP)

OECD/NEA Membership



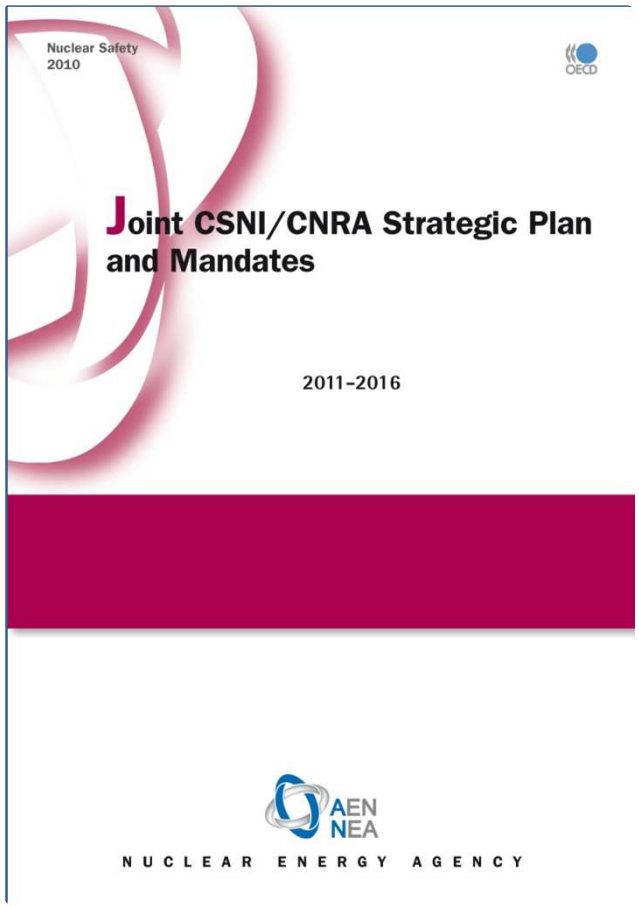
- Australia
- Austria
- Belgium
- Canada
- Czech Republic
- *Chile*
- Denmark
- *Estonia*
- Finland
- France
- Germany
- Greece
- Hungary
- Iceland
- Ireland
- *Israel*
- Italy
- Japan
- Korea
- Luxembourg
- Mexico
- Netherlands
- *New Zealand*
- Norway
- *Poland*
- Portugal
- Slovak Republic
- *Slovenia*
- Spain
- Sweden
- Switzerland
- Turkey
- United Kingdom
- United States

Not member of NEA

NEA Strategic arenas of Work

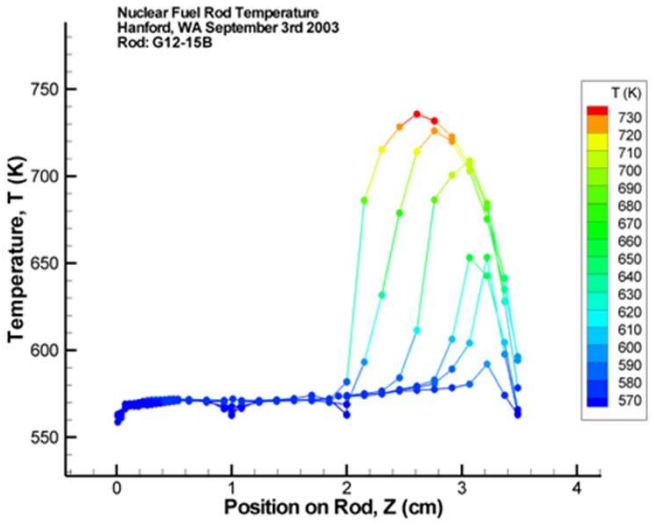
- 1. Nuclear safety and regulation :
  - CNRA (Committee on Nuclear Regulatory Activities)
  - CSNI (Committee on the Safety of Nuclear Installations)
  - OECD/NEA Joint Projects (on Safety Research)
- 2. Radioactive waste management
- 3. Radiation protection and public health
- 4. Nuclear science
- 5. Economics, resources and technology
- 6. Legal affairs

Main Challenges (2011 – 2016)



- Adequate Nuclear Skills and Infrastructure
- Effectiveness and Efficiency of Activities Related to Safety
- Safe Operation of Current Nuclear Facilities
- Safety in New Nuclear Facilities
- Safety in Advanced Reactor Designs

Committee on the Safety of Nuclear Installations (CSNI)



- Senior regulators, TSO and research leaders, some utility representation
- Maintaining, harmonizing and further developing the scientific and technical knowledge base required to assess and enhance the safety of nuclear reactors and fuel cycle facilities
- Main areas of work include:
  - Analysis and management of accidents
  - Integrity and ageing of components and structures
  - Risk assessment
  - Fuel safety
  - Safety of fuel cycle facilities
  - Human and organizational factors
  - Safety research projects and activities

TAREF Objectives

- To identify and prioritize research needs for advanced reactors, specifically Gas Cooled and Sodium Fast Reactors

- Identify relevant safety issues
- Identify relevant facilities for safety research on identified issues
- Provide recommendations on strategy for facilities and international programs in support to safety assessment

TAREF conclusions and recommendations

- TAREF a useful exercise for :
  - Gathering consensus on the technical areas and issues related to GCR and SFR safety
  - Identifying a number of facilities that are or will become available for supporting GCR and SFR safety research
- The GCR reccommendations :
  - The Japanese HTTR is the only experimental HTGR facility available in the OECD countries context.
  - The HTTR experiments planned are highly relevant for HTR safety assessments.
  - Actions should be taken to develop an international programme centred on the HTTR capabilities and focused on the safety issues identified in the present task.
- The SFR reccommendations :
  - Due to specific context of SFR development limited availability of relevant facilities for all technical areas in the short term
  - Decision to restart or to modify some facilities under consideration

OECD/NEA Joint Projects

Motivations and Goals

- **Resolve issues** relevant for the nuclear community by means of research shared by many countries
- **Enhance** technical **exchange**, co-operation and consensus-building internationally
- **Support** the continued operation of **unique** test **facilities** which are of value to the OECD/NEA nuclear community
- **CSNI is committed to promote** and facilitate Safety Research, through scientific and technical cooperation between member countries
- The availability of **safety research results** is key in assuring the high level and long-term safety of nuclear facilities
- This goal can however only be reached if **dedicated and sustained funding** for safety research is maintained. The availability of experimental infrastructures is also essential

NEA Joint Safety Research Projects

HALDEN	Fuel and Materials, I&C, Human Factors	Norway
CABRI	Fuel in RIA transients	France
SCIP-2	Fuel integrity	Sweden
SFP	Spent fuel safety	USA *(starting)*
PRISME	Fire Safety	France
ROSA	System TH	Japan
PKL-2	PWR SG behaviour	Germany
MCCI-2	Severe Accident	USA *(ending)*
BIP	Iodine chemistry	Canada
SERENA	Steam explosion	Korea & France
THAI	Containment (H2, I)	Germany
SETH-2	Containment (CFD)	Switzerland & France
SCAP	SCC+Cable Ageing	Japan *(ending)*
Databases	**1. FIRE 2. ICDE 3. OPDE 4. COMPSIS**	
HTTR	*GCR*	*Japan (proposed)*

Joint Projects Conclusions & Perspectives

- **A Success Story:**
  - First OECD/NEA Joint projects were implemented in 1958 at the same time NEA was established (Eurochemics, Dragon, Halden).
  - The first Safety Project (LOFT) was set-up in the early 1980s. After 30 years, 16 Safety Projects were completed and 11 other are ongoing.
  - Industry is actively participating in several projects. Positive experience with industry-regulator co-operation in data gathering.
- **Benefit for Members Countries:**
  - Sharing the expertise within a broader community of experts
  - Building consensus knowledge for improving nuclear safety worldwide
  - Sharing the cost of expensive experimental research programmes
- **Toward the Future:**
  - With the new perspectives in nuclear energy (Long Term operation, Gen 4) new safety challenges may arise

Efficient framework to start new projects in nuclear safety research with international support.

Long term Operation (LTO)

- Different approaches in North America, Europe and Asia
- PSR common element though not the same process and criteria
- Ageing management – key topic
- Design safety policy – safety level similar than new plants
- Severe accidents – major challenge

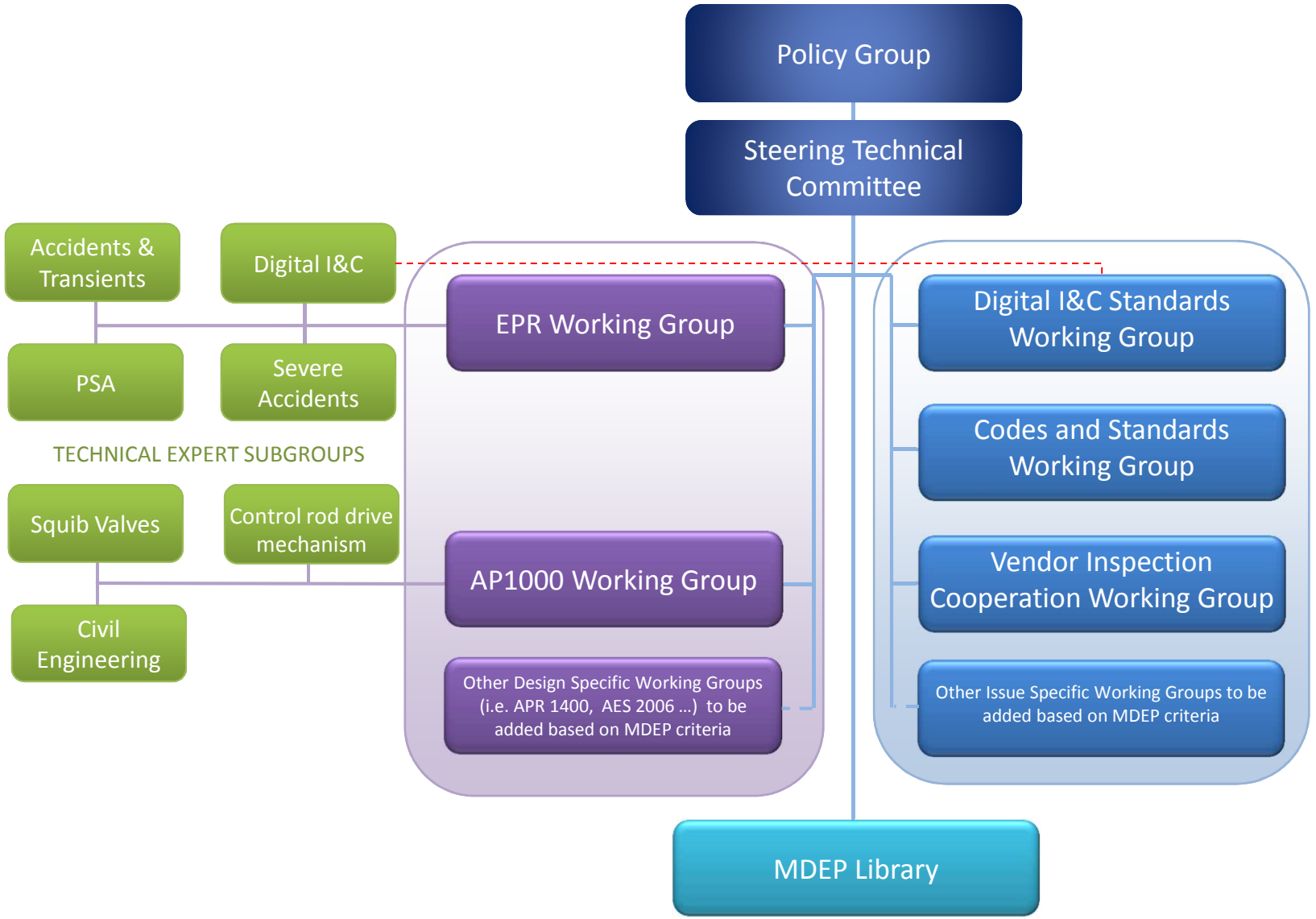
Long Term Operation Green Booklet

- CNRA endorsement June 2010
- Japan leading the group
- Draft ready for June 2011
- Input to NEA International Forum on Long Term Operation next June 2011
- Reviewed based on findings from Forum
- Final approval on December 2011

Content of LTO Green Booklet

- Principles Related to the Regulation of Long Term Operation
- Key Challenges
- Operator's Considerations
- Regulator's Considerations
- Recommendations for Regulatory Improvements

MDEP


Policy Group
Steering Technical Committee
Accidents & Transients
Digital I&C
PSA
Severe Accidents
TECHNICAL EXPERT SUBGROUPS
Squib Valves
Control rod drive mechanism
Civil Engineering
EPR Working Group
AP1000 Working Group
Other Design Specific Working Groups (i.e. APR 1400, AES 2006 ...) to be added based on MDEP criteria
Digital I&C Standards Working Group
Codes and Standards Working Group
Vendor Inspection Cooperation Working Group
Other Issue Specific Working Groups to be added based on MDEP criteria
MDEP Library

MDEP

- CSWG: To work with standards development organizations (SDOs) to compare pressure vessel codes and preclude further divergence among codes
- DICWG: To achieve common positions on regulatory requirements and practices related to digital I&C
- VICWG: To benefit from other regulators' inspections of vendors to support new reactor reviews, vendor inspections and manufacturing oversight. To produce joint inspection protocol
- DSWG: To share and cooperate on specific design evaluations and construction oversight

MDEP

- MDEP is a key programme for new build activities
- MDEP is an initiative pooling an effective an efficient expert network from different countries
- MDEP is a mid and long-term programme , but short term concrete results are necessary
- Convergence of regulatory practices will finally lead to convergence of regulatory requirements
- Improve MDEP information dissemination

Concluding Remarks

- First priority for NEA countries is safety and regulation
- CSNI has been supporting NEA safety institutions in safety assessment and safety research
- CSNI has been the first international concerted response for enhancing technical exchange, co-operation and consensus-building
- CSNI products (e.g. SOARs, ISPs) have been key contributors to national safety assessment practices
- NEA joint research projects have contributed to address common safety concerns and to retain countries technical expertise and infrastructure in strategic fields of nuclear safety
- From NEA perspective, concerted actions among technical safety institutions should build up on the successful framework existing today

Conclusions

(Mr. Repussard (CSNI Chairman) to NEA Steering Committee)

- *CSNI is a well established, well functioning NEA Committee, which has a strong track record in producing valuable, timely output to support member countries' efforts towards continual enhancement of nuclear safety*
- *CSNI is a recognized forum to coordinate and where appropriate cooperate on safety R&D activities among member countries*
- *CSNI could in the future play an important role in the process of nuclear safety harmonization, by encouraging upstream the further convergence of safety experts' knowledge*

The OECD Nuclear Energy Agency
www.nea.fr/nsd