Multinational Design Evaluation Programme

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General Objectives and Activities

Objectives

The Multinational Design Evaluation Programme (MDEP) is a multinational initiative to develop innovative approaches to leverage the resources and knowledge of mature, experienced national regulatory authorities who will be tasked with the regulatory design review of new reactor plant designs.

Activities:

- Enhancing multilateral cooperation within existing regulatory framework.
- Increasing multinational convergence of codes, standards, and safety goals by establishing Reference Regulatory Practices.
- Implementing MDEP products and regulatory practices to facilitate licensing reviews of new reactors, including those being developed by the Generation IV International Forum.
Participants

• Canada
• China
• Finland
• France
• Japan
• Republic of Korea
• Russian Federation
• South Africa
• U.K.
• U.S.A

• IAEA participates
• NEA serves as technical secretariat
History and Background

- Initially proposed in 2005
- Pilot projects undertaken in 2006 and 2007 to determine feasibility and desirability of cooperating on design reviews and harmonization requirements and standards
- Initial 2-year programme approved in 2007 and begun in 2008
- Converted to long-term project with a focus on interim results in 2009
Structure

Policy Group

Steering Technical Committee

Accidents & Transients
Digital I&C
PSA
Severe Accidents
Squib Valves
Control rod drive mechanism
Civil Engineering

TECHNICAL EXPERT SUBGROUPS

EPR Working Group
AP1000 Working Group

DESIGN SPECIFIC WORKING GROUPS: COOPERATION

Digital I&C Standards Working Group
Codes and Standards Working Group
Vendor Inspection Cooperation Working Group

ISSUE SPECIFIC WORKING GROUPS: CONVERGENCE

Other Design Specific Working Groups (i.e. APR 1400, AES 2006 ...) to be added based on MDEP criteria

Other Issue Specific Working Groups to be added based on MDEP criteria

MDEP Library

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MDEP Types of Working Groups

**Issue Specific Working Groups**

- **Goal:** to benefit from other regulators’ experiences and to encourage harmonization in regulatory practices and requirements and in industry codes and standards

**Design Specific Working Groups**

- **Goal:** to share and cooperate on specific design evaluations and construction feedback regarding design-related issues
Design Specific Working Groups

**EPR Working Group**
- Members: Finland (Chair), France (Co-Chair), Canada, China, U.K., U.S.
- Topics addressed: accidents and transients, digital I&C, PSA, severe accidents

**AP1000 Working Group**
- Members: U.S. (Chair), China (Co-Chair), Canada, U.K.
- Topics addressed: squib valves, CRD mechanism, civil engineering

**Accomplishments**
- Developed Common Positions (EPR Digital I&C design, AP1000 squib valves)
- Shared issues identified, questions to applicant, and drafts of evaluations
- Identified differences among various country designs
- Identified additional questions for applicants based on MDEP interactions
**Vendor Inspection Cooperation WG (VICWG)**
- Explore utilization of other regulator’s inspections of Class 1 components and quality assurance measures.
- Conduct witnessed and joint inspections to better understand each other’s inspection requirements, processes, and results.

**Codes and Standards WG (CSWG)**
- Explore opportunities for global harmonization of pressure-boundary design codes for nuclear power plants (ASME, JSME, RCC-M, KEPIC, CSA, Russian Codes).
- Explore regulatory acceptance of components designed, manufactured, and fabricated using another country’s code.

**Digital Instrumentation and Control WG (DICWG)**
- Identify and explore opportunities for convergence of applicable standards (IEEE, IEC, etc.).
Accomplishments

- Completed comparison of pressure boundary for Class 1 pressure vessels, piping, pumps, and valves in coordination with standards development organizations (SDOs)
- Obtained commitments in principle from SDOs to work together to minimize further divergence of code requirements
- Identified member countries most significant technical issues regarding DI&C systems
- Developed DI&C common positions
- Obtained agreement from IEC and IEEE to increase cooperation and consider MDEP common positions for potential areas of convergence of standards
- Performed approximately 24 witnessed and 1 joint inspection
- Developed Inspection Protocol for conducting witnessed and joint inspections
- Compared quality assurance requirements used in the oversight of vendors with the goal of pursuing potential harmonization
Terms of Reference, MDEP Annual Reports and Conference Proceedings

Common Positions

- Design Specific Common Positions agreed upon by members of a design specific working group. Each regulator responds independently to its applicant, taking the same position.

- Generic Common Positions developed by issue specific working groups. Constitute best practices, recommend by MDEP members to IAEA and standards organizations.

- There is no obligation on the part of any regulatory body to follow them. If a regulatory body chooses to adopt a Generic Common Position, it would be through that country’s normal processes. The responsibility for regulatory decisions continues to be with the national regulator.
MDEP Products

STC Position Papers such as on Safety Goals
Other Documents such as comparisons of practices and recommendations on reference regulatory practices

- Goal is to look for consensus among the MDEP regulators on areas where harmonisation may be possible and yield a higher focus on safety and/or saving of resources

- Products are recommended practices or positions that MDEP and other regulators may utilize in their existing regulatory frameworks and which may be used by vendors or licensees/applicants to encourage standardisation
MDEP Next Steps

Design Specific Working Groups

- Continue to share experience, feedback, and evaluations to make reviews more safety focuses
- Continue to issue design specific common positions when agreement is achieved on important safety aspects of the designs

Issue Specific Working Groups

- Produce documents that evaluate practices among MDEP regulators and make recommendations on reference regulatory practices
- Continue to issue generic common positions (especially in the DI&C area)
- Pursue harmonisation of codes and standards and possible acceptance of use of other country’s codes and standards
- Continue to perform witnessed and joint inspections to more fully explore how to utilize other regulator’s vendor inspections
- Explore documenting common quality assurance requirements based on those that are acceptable to MDEP members (and with input from global standards such as ISO90001+ and GS-R-3)
MDEP Interactions

- Goal is to communicate MDEP activities to key stakeholders
  - Non-MDEP Regulators
    - CNRA and CSNI (via the Working Group for the Regulation of New Reactors)
    - WENRA
  - International organizations
    - IAEA (attends generic MDEP meetings), GIF, EC
  - Industry
    - Vendors, licencees, standards development organizations (ASME, JSME, AFCEN, CSA, NIKIET, KEA, IEEE, IEC, etc.), WNA and other industry organizations
- Second MDEP Conference on New Reactor Design Activities 15 – 16 September 2011 at OECD Headquarters in Paris
- Public (each regulator should take the lead in its own country) and information may be found at the MDEP public website www.oecd-nea.org/mdep

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MDEP is Supporting Safety Design Reviews

- Coordination and cooperation by the safety authorities is making each regulator stronger in ensuring safety of new reactors worldwide
- Communication of key safety issues is paramount

MDEP is Supporting Harmonisation where Safety will be enhanced

- Identifying best practices and encouraging harmonisation of regulatory practices and requirements to enhance safety
- MDEP is engaged with the industry because the industry plays a key and leading role in harmonisation of its standards and requirements

MDEP is Communicating with Stakeholders about its Activities

MDEP continues to be a unique and key program for new build activities for the mid and long term
MDEP

Information available

• General information
• Terms of Reference
• Conference presentation
• Proceedings of the Conference to come

www.oecd-nea.org/mdep