

Multinational Design Evaluation Program (MDEP)

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What is MDEP?

A multinational initiative undertaken by national regulatory authorities of 12 countries to:

- Co-operate and share information on safety design reviews of specific designs in order to ensure a greater safety focus on the reviews in each country and
- Share information about national and international regulatory requirements and practices in order to explore opportunities for possible harmonization or convergence of such requirements when safety enhancements may be realized
- A stated objective in the MDEP Terms of Reference is to enable and encourage safer global standardized reactor designs

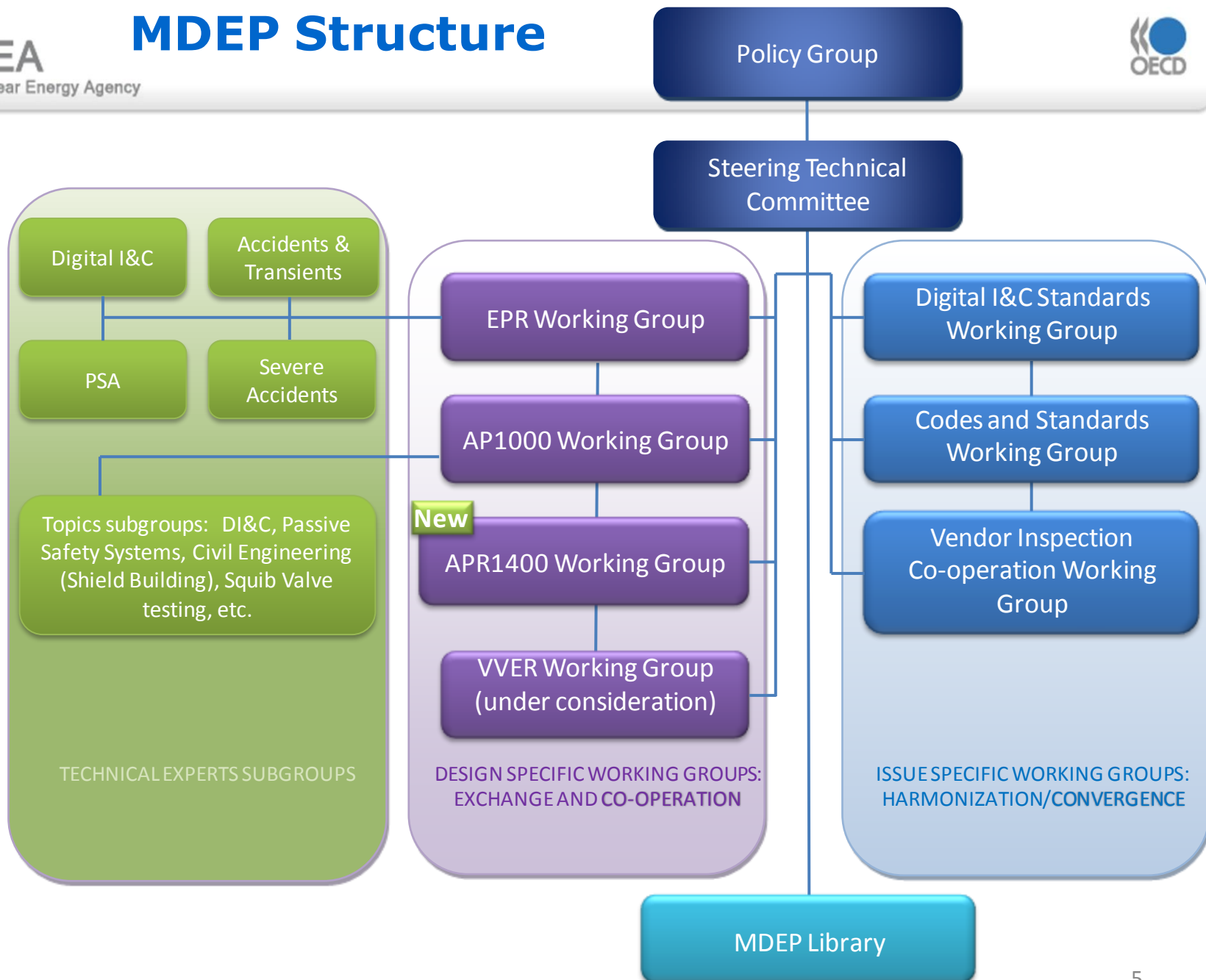
Important aspect is that MDEP co-operation is being undertaken under currently existing regulatory frameworks and each national regulator maintains its sovereign rights and responsibilities to regulate nuclear safety in accordance with its existing national laws.

Who is involved in MDEP activities?

- Members since MDEP inception in 2006 include national regulatory authorities from Canada, China, Finland, France, Japan, the Republic of Korea, the Russian Federation, South Africa, the U.K., and the U.S.A.
- India's regulatory authority joined in 2011
- The U.A.E's regulatory authority joined in 2012 as an associate member
- IAEA participates in the generic work of the MDEP
- NEA performs the technical secretariat duties
- National technical support organizations participate in MDEP activities as requested by the national regulatory authority

What activities are part of MDEP?

- Co-operation on specific design reviews (limited to selected countries)
 - EPRWG (Canada, China, Finland, France, India, the U.K., and the U.S.A)
 - AP1000WG (Canada, China, the U.K., and the U.S.A.)
 - APR1400WG (Finland, South Korea, the U.A.E, and the U.S.A.)
 - VVERWG (AES2006/AES91 design) under consideration (Russia, India, Vietnam, and Turkey, if approved by the Policy Group)
- Co-operation on generic issues (all countries invited to participate)
 - Mechanical Codes and Standards (CSWG)
 - Digital Instrumentation and Control (DICWG)
 - Vendor Inspection Cooperation (VICWG)



Policy Group (PG)

- Heads of Agencies
 - Provide guidance on MDEP approach including interactions with industry and other stakeholders
 - Monitor progress in reaching goals
 - Determine participation and membership in MDEP
 - Approve new working groups as proposed by the STC

Steering Technical Committee (STC)

- Senior level staff involved in licensing new reactors
 - Manage and approve detailed program of work
 - Approve procedures and products
 - Coordinate communications internal and external to MDEP (important coordination with other regulatory bodies such as IAEA, CNRA/CSNI, and WENRA, and other industry stakeholders such as WNA CORDEL, WANO, GIF, vendors, operators, SDOs)
 - Report status of the MDEP to the PG

Working Groups (EPRWG, AP1000WG, APR1400WG, CSWG, DICWG, VICWG)

- Produce and carryout program plans that include
 - Long term goals and objectives
 - Detailed work plans for 2-year period
 - Potential products
 - Organizations to interact with to inform activities
- Design specific working groups must take care to protect proprietary information
- Report status of work accomplished and future plans to the STC every 4 months
- Provide feedback to the STC of potential impediments to work and new issues that may be addressed as part of MDEP

With other “regulatory” bodies

- NEA CNRA/CSNI (Working Group for the Regulation of New Reactors)
- IAEA
- WENRA
- Other regulators

Other stakeholders

- Vendors, operators (especially of EPR, AP1000, and APR1400)
- Standards Development Organizations
- EC
- WNA Co-operation in Reactor Design Evaluation and Licensing (CORDEL) working group
- WANO
- GIF and INPRO (advanced reactors)

These stakeholders are invited to participate in WG and STC meetings, as appropriate.

In addition, 2 MDEP Conferences have been held in Paris (2009 and 2011) at which stakeholders were invited to attend/participate. The STC performed a comprehensive self assessment with stakeholder input in 2012.

- MDEP has been very useful to the participating regulators in carrying out safety design reviews of standard designs being deployed throughout the world
- MDEP is supporting harmonization efforts where safety will be enhanced
- MDEP is communicating with stakeholders about its activities
- MDEP continues to be a unique and key regulatory activity for new build safety reviews

Codes & Standards Working Group

Goals/Objectives

- Achieve global harmonization of codes for NPPs (consistent with MDEP's goals)

Implementation Plan

- identify similarities and differences between major pressure boundary design codes
- identify most beneficial areas for convergence
- examine potential paths for reconciliation

Standards Development Organizations' Code Comparison Project

- MDEP/CSWG collaborated with standards development organizations (SDOs) to compare six countries' code requirements
- SDOs compared their nuclear codes/standards:

ASME (U.S.)	BPVC Section III (2007)
AFCEN (France)	RCC-M (2008)
JSME (Japan)	S-NC-1 (2008)
KEA (Korea)	KEPIC (2007)
CSA (Canada)	N285A (2008E-09A)
RNO (Russia)	PNAE G-7-002-86

SDOs' Code-Comparison Report

- Code comparison complete for Class 1 vessels, pumps, valves and piping for Canada, France, Japan and Korea
- Code comparison report STP-NU-051 is publicly available on ASME Website and MDEP library (http://stllc.asme.org/News_Announcements.cfm)
- Russian Code results will be added by Dec 2012

Codes & Standards Working Group

Products

- The MDEP/CSWG has prepared four draft documents:
 - MDEP Common Position CSWG-01, “Lessons Learnt on Achieving Harmonisation of Codes and Standards for Pressure Boundary Components in Nuclear Power Plants”
 - MDEP Common Position CSWG-02, “Fundamental Attributes for the Design and Construction of Pressure Boundary Components”
 - MDEP Common Position CSWG-03, “Essential Performance Guidelines for Pressure Boundary Components”
 - MDEP Technical Report CSWG-01, “Regulatory Frameworks for the Use of Nuclear Pressure Boundary Codes and Standards in MDEP Countries”

Codes & Standards Working Group

Next Steps

- Continue working with standards development organizations and CORDEL to achieve convergence on selected code differences
- Continue to follow the issuance of the code comparison results by the Russian Federation
- Finalize common positions
- Explore future actions to achieve harmonization of code and standards

Digital Instrumentation & Control Working Group

Goals/Objectives

- Identify opportunities for convergence of applicable standards

Implementation Plan

- Identified member countries most significant technical issues
- Draft Common Positions

Accomplishments

- Drafted 8 Common Positions. Three approved by the STC and made public.
- Obtained agreement from IEC and IEEE to increase cooperation and consider MDEP common positions for potential areas of convergence of standards. Established formal liaison between MDEP and IEC.

Common Position	Status
Software Common Cause Failure	drafted
Software Tools	issued
Software Validation and Verification	issued
Data Communication Independence	issued
Complex Electronics	drafted
Simplicity in Design	issued
Qualification of Industrial Digital Devices of Limited Functionality for Use in Safety Applications	Early stages
System Architectural Considerations for Systems Classified at the Highest Safety Level	Early stages
Surveillance and Periodic Testing	drafted
Impact of Cyber Security Features on Digital I&C Safety Systems	issued
Factory and Site Acceptance Testing	drafted

- Complete development of Common Positions and present to the STC and Policy Group for approval. Total of 15 positions identified and approved to work.
- Identify areas of potential convergence and make recommendations to standards organizations