

Multinational Design Evaluation Program STAGE 2

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Evolution of the initiative

- Certification —→ Approval —→ Evaluation
- One country —→ International —→ Multinational
- Direct connection to GIF —→ midterm objective where other Generation 3+ designs would benefit
- Single process —→ Three stages process
- Core group countries/Not limited to NEA membership
- Need for Technical Secretariat

Policy Group Meeting

- NEA headquarters 22 September 2006
- All core countries participated, most of them represented by the top regulator
- IAEA took part at the meeting
- Elected PG chair, Mr. André C. Lacoste (Chairman ASN, France)
- Agreed to designate the initiative as the Multinational Design Evaluation Programme (MDEP)
- Approved the MDEP Stage 2 Terms of Reference
- Invited the NEA to perform the Technical Secretariat
- Launched two pilots projects
- Requested the Secretariat to develop and propose a communication plan and procedures for interacting with interested stakeholders

MDEP Stage 2

Terms of Reference

Project Objective

The main objective of the MDEP Stage 2 effort is to establish **reference regulatory practices and regulations** to enhance the safety of new reactor designs. The convergence of regulatory practices and regulations associated with the reactor design reviews should allow for **enhanced cooperation among regulators**, improving the effectiveness and efficiency of the regulatory design reviews which are part of each countries licensing process. It is expected that this will also:

- Enable and encourage safer standardised reactor designs
- Facilitate the design reviews of new reactors in many countries, including developing countries
- Further public understanding and acceptance of safety goals on an international basis

A key concept throughout the work of Stage 2 is that **national regulators retain sovereign authority** for all licensing and regulatory decisions.

Expected Outcomes and Outputs

- Exchange of information on regulatory practices for design reviews including the technical evaluations, codes, standards and safety goals, inspection practices, licensing requirements, safety research, operating experience, etc.
- **Identify similarities and differences and obtain insights to better understand the technical basis for the differences**
- Seek for and achieve convergence on reference regulatory practices in order to facilitate more efficient and effective design reviews, if reasonably practicable.
- **Implement the results on specific designs for new reactors.**
- Further stakeholders understanding of regulatory practices on an international basis
- Stage 2 outcome would constitute a very useful input to the IAEA Safety Standards process.

Project Implementation

The project will be carried out in two (2) phases as follows:

Phase 1

- A Preparatory Stage, to establish the scope, objectives and initial planning including the preparation and approval of the terms of reference.
- A Pilot Project, which will consist of two separate efforts to assess the feasibility of the work.
 - Licensing basis / Scope of design safety review / Safety goals
 - Component manufacturing oversight (including quality assurance issues)
- An Assessment Period, where the results of the pilot project will be assessed and decisions will be made regarding continuing project efforts.

Phase 2

Stage 2 Implementation Phase, where it is envisioned that the convergence of additional broad and specific scope topics will be pursued.

Project Organisation

Technical Secretariat

The OECD Nuclear Energy Agency (NEA) has been invited to perform the Technical Secretariat function in support of the MDEP Stage 2

The Secretariat support is provided by the Nuclear Safety Division, also providing same support to CNRA, CSNI and GIF Risk and Safety WG

Membership

- Participation in the Policy Group and the Steering Technical Committee will be open to interested countries that already have commitments or firm plans for new build.
- These include: Canada, China, Finland, France, Japan, Korea, Russian Federation, South Africa, the United Kingdom and the United States.
- Participation in the working groups will be initially from the above countries, but participation by others may be considered on a case by case basis.
- IAEA will take part in the MDEP Stage 2.

MDEP Working Meetings

Steering Technical Committee Meeting

- NEA headquarters 23-25 October 2006
- Most countries participated. IAEA took part at the meeting
- USNRC (G. Holahan) was elected to chair STC
- They agreed to work in three specific topics
 - Severe Accidents Requirements
 - ECCS performance
 - Digital I&C requirements
- France, Russia and the US will each lead one of the topics
- The STC report will address: areas of commonality and areas of differences in regulatory requirements and regulatory programs and practices; the nature, importance, and basis for the differences; potential areas for increased regulatory cooperation; and areas for potential program modifications to minimize or eliminate those differences.

Working Group on Component Manufacturing Oversight

- NEA headquarters 26-27 October 2006
- Most countries participated. IAEA took part at the meeting
- Korea will chair CMO (S. Yang/M. Mayfield)
- The CMO Working Group has been given the task of assessing the regulatory requirements and review associated with the manufacture processes for components for use in nuclear power plants.
- To facilitate completing their task within one year, the WG should focus its attention on the manufacturing processes for the components in the highest safety class for each participating country, and limit the scope to mechanical components including: pumps, valves, piping, and pressure vessels.
- The WG efforts should include: the use of codes and standards, quality control and quality assurance programs, and inspection programs by the manufacturer, the customer (i.e. licensee or applicant) and the regulatory authority.

Second Meeting Working Group on CMO

- NEA headquarters 26 February to 2 March 2007
- Most countries participated. IAEA took part at the meeting
- Significant participation from interested stakeholders (AREVA, ASME/BNCS, Westinghouse, AECL)
- First part of meeting: open with Code organisations and Vendors
 - Quality Assurance Standards (ASME vs ISO9001 vs IAEA)
 - Design of Pressure Boundary Components (ASME vs RCC-M)
- Second part of meeting: WGCMO discussion of responses to survey on safety class mechanical components and next steps to complete report to STC
- Site visit to AREVA Saint Marcel facility

Second Meeting Working Group on CMO

- Quality Management issues are not seen as an impediment to the goals of MDEP for reconciling component manufacturing requirements
- Supply streams will require greater levels of oversight
- Regulatory requirements related to QM differ significantly, ranging from quite prescriptive mandating specific codes to those where the applicant may specify generally accepted codes
- Design codes ASME and RCC-M are more similar than different, and components designed to comply with them are all judged to be fit for service
- RCC-M generally addresses issues that ASME would leave to the operator to address (i.e. corrosion, thermal aging, cobalt content)
- RCC-M requires more detailed analyses than ASME, but those are also permitted by ASME rule.

Pilot Projects Schedule

- Customized Survey developed and distributed (30/11/06) **Done**
- 1st Responses by National Experts (15/02/07) **Done**
- STC Status Meeting (26-27 March 2007)
- Final (2nd) Responses by National Experts provided to all countries (30/04/07)
- Third WGCMO meeting in Korea (28 May - 2 June)
- Develop Recommendations and provide Topic Leaders (31/05/07)
- Synthesis and Analysis by Topic Leaders (30/06/07)
- Discussion and Analysis by STC - Meeting (September 07)
- Final Report (31/10/07), including CMO
- Feasibility Assessment Report (February 2008)
- Policy Group Meeting (Spring 2008)



Multinational Design Evaluation Programme - Stage 2

The NEA has been invited to perform the technical secretariat functions for Stage 2 of the Multinational Design Evaluation Programme (MDEP). The MDEP was set up to share the resources and knowledge accumulated by national nuclear regulatory authorities during their assessment of new reactor designs, with the aim of improving both the efficiency and the effectiveness of the process.

Goals

The main objective of Stage 2 is to identify common regulatory practices and regulations that enhance the safety of new nuclear reactor designs. Ultimately this is expected to lead to a convergence of codes, standards and safety goals in the participating countries. To this end, two pilot projects have been launched. The first will investigate the licensing basis for new nuclear reactor designs, the scope of design safety reviews and overall safety goals. The second will examine regulatory oversight of components manufactured for new nuclear reactors.

Stage 2 has the ambitious goal to provide initial results within a year on sectors such as digital instrumentation and control, severe accident requirements and emergency core cooling system requirements.

Expected results

The expected results of MDEP Stage 2 will be to:

- Identify similarities and differences in regulatory practices and obtain insights in order to better understand the technical basis for the differences.
- Seek and achieve convergence on reference regulatory practices in order to facilitate more efficient and effective design reviews, if reasonably practicable.

Information



- ▶ [MDEP Terms of Reference \(Stage 2\)](#)

Meetings



- ▶ [Policy Group](#)
- ▶ [Steering Technical Committee](#)
- ▶ [Working Group on Component Manufacturing Oversight](#)